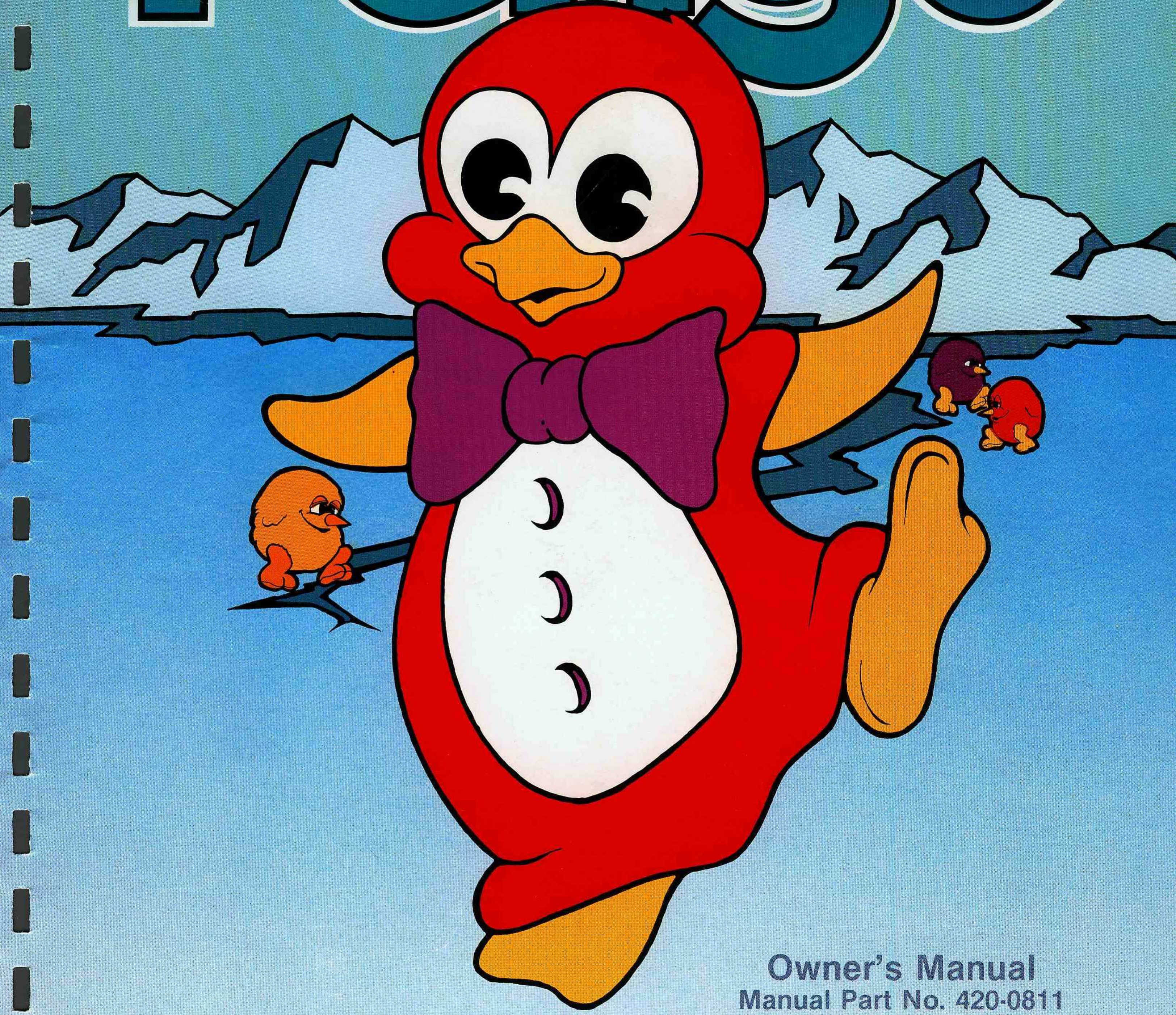
Pengo™



Owner's Manual

Manual Part No. 420-0811

SEGA®

Pengo™

Owner's Manual

Manufactured By

SEGA®

TLX 910-335-1621

PENGO™ OWNER'S MANUAL

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INTRODUCTION

PENGO^{TM} is a microprocessor based coin-operated electronic game, that makes extensive use of digital integrated circuitry and television monitor concepts. This manual is designed for the use of maintenance technicians who possess a general working knowledge of solid-state circuitry and video monitor theory. Any individual NOT knowledgeable in these areas SHOULD NOT attempt repair of the electronic portions of the game.

In addition to this manual and training in electronics, troubleshooting and repair will be facilitated by access to general electronic type handtools, a multimeter, a 50 to 100 MHz oscilloscope and a logic probe would be helpful.

Technical assistance is available toll-free by calling;

1-800-854-1938 or

1-800-722-8576 inside California

Parts information assistance is available toll-free by calling;

1-800-854-1900 or

1-800-722-8575 inside California

Questions or comments concerning PENGO^{TM} or any of our games are welcome and should be directed to:

Customer Service Manager
SEGA Electronics, Inc.
16250 Technology Drive
San Diego, California 92127-1985

IMPORTANT NOTES

The following note is included in compliance with FCC rules:
WARNING: This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance the instruction manual, may cause interference to radio communications. As temporarily permitted by regulation, it has not been tested for compliance with the limits for Class A computing devices pursuant to Subpart J of Part 15 FCC Rules, which are designed to provide reasonable protection against interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

OTHER NOTES

NEVER replace any components with anything other than exact replacement parts.
NEVER remove circuit board connections while power is on.
DO NOT replace fuses with anything other than the proper value. A blown fuse indicates an overload condition within the game. Replacing fuses with a higher value can cause severe damage to internal components if an overload occurs.
ALWAYS consult the manual before attempting repairs.

GAME CONCEPT

When the Start Button is pushed, the screen is filled with a grid of 10 X 16 ICE BLOCKS. To the accompaniment of music, some of the blocks are erased to form a maze of ICE BLOCKS (the maze configuration changes from round to round). The central character, PENGO the Penguin, appears at the center of the screen, and three SNO-BEES (more than three, in later rounds) also appear randomly within the maze. Three of the ICE BLOCKS are special DIAMOND BLOCKS, which can be aligned through skillful play for extra points. There are also some special blocks that flash on and off for a few seconds at the start, signifying that they contain SNO-BEE eggs that will hatch later on. The SNO-BEES are the antagonists of PENGO, and they pursue him around the ice field. If a SNO-BEE catches PENGO, it delivers a fatal sting.

PENGO can be maneuvered about the ice field by means of the four-way joystick, and can also rearrange the maze of ICE BLOCKS by pushing individual ICE BLOCKS around the ice field. If PENGO comes up against a "free" ICE BLOCK (that is, one that is not blocked on the side opposite PENGO), the player can, by pushing the control button, cause PENGO to push the ICE BLOCK away from him. It will move until it comes up against another ICE BLOCK, or against one of the four walls. By re-arranging the blocks in this fashion, PENGO can line up the three DIAMOND BLOCKS so that they adjoin, thereby earning a 10,000 point bonus (but only 5,000 points if the DIAMOND BLOCKS are lined up against a wall, as this is much easier).

If PENGO comes up against an ICE BLOCK that is not "free" (that is, one that is blocked on the side opposite PENGO by a wall or by another ICE BLOCK), then pushing the Control Button causes PENGO to slowly disintegrate that ICE BLOCK and move through the space. DIAMOND BLOCKS can be pushed around the ice field by PENGO just like ordinary ICE BLOCKS, but they cannot be disintegrated.

The SNO-BEES pursue PENGO as he goes about his tasks, and if they catch him, will deliver a fatal sting. PENGO can squash the SNO-BEES, by pushing ICE BLOCKS into them. If an ICE BLOCK is pushed into a SNO-BEE, it will carry him along, and destroy him by squashing him against another ICE BLOCK or wall. Additionally, SNO-BEES can be "frozen" if they are touching the wall of an ice field when PENGO pushes against that same wall. The wall will vibrate, and any

SNO-BEE up against that wall will be temporarily frozen. PENGO must now run over the frozen SNO-BEE to destroy it. This tactic works on any of the four walls, and can be used against more than one SNO-BEE at a time.

In these two ways, PENGO can clear the ice field of the SNO-BEES. PENGO earns points for each SNO-BEE squashed, and extra bonus points for squashing more than one SNO-BEE with a single push of one ICE BLOCK. PENGO can also earn extra points by dispatching the SNO-BEES quickly; the more quickly the SNO-BEES are cleared from the field, the more bonus points are earned.

New SNO-BEES are hatched in some of the ICE BLOCKS, and emerge as the play progresses. If PENGO can remember which of the ICE BLOCKS harbor SNO-BEE eggs, (they flash briefly at the start of the round) and can disintegrate them before the SNO-BEES hatch, then PENGO can shorten the game time considerably, thereby earning time bonus points. In addition, PENGO earns additional bonus points for disintegrating any ICE BLOCK containing a SNO-BEE egg.

SNO-BEES can also disintegrate ICE BLOCKS and will do so in order to attack PENGO. When only one SNO-BEE is left, that last SNO-BEE becomes much more dangerous, moving about much more quickly and disintegrating ICE BLOCKS more rapidly. If that last SNO-BEE is not destroyed before the time runs out, it will gradually grow smaller and finally disappear altogether, signifying the end of that round.

Lining up the three DIAMOND BLOCKS, vertically or horizontally, is the best way to attain a high score, because of the substantial bonus points earned. Once two DIAMOND BLOCKS are aligned, all three DIAMOND BLOCKS will start to flash. After successfully lining up all three DIAMOND BLOCKS, the whole play screen flashes, all game movement stops and the bonus points are counted down at the center of the screen and added at the top. As soon as this countdown is completed, PENGO is again free to move, but all the SNO-BEES are frozen for a few seconds; this is a good opportunity for PENGO to catch them and finish them off. However, if PENGO is too slow and the SNO-BEES recover, the game continues as before.

In a two-player game, players alternate after each PENGO is stung. The game ends when the players lose their last PENGO.

SCORING

- Paralyze a SNO-BEE and catch it . . . . 100 points
- Crush a SNO-BEE between ICE BLOCKS 400
- Disintegrate an ICE BLOCK containing a SNO-BEE egg 500
- Crush 2 SNO-BEES at the same time 1,600
- Crush 3 SNO-BEES at the same time 3,200
- Special Bonus

  Align 3 DIAMOND BLOCKS along a wall 5,000

  Align 3 DIAMOND BLOCKS not along a wall 10,000
- Time Bonus

  Destroy all SNO-BEES within the present time to score bonus points as follows:

TIME BONUS POINTS

Seconds	Bonus Points
0 to 19	5,000
20 to 29	2,000
30 to 39	1,000
40 to 49	500
50 to 59	10
60 or over	No Bonus

OPTION SELECTION

OPTION	SWITCH #1							
	1	2	3	4	5	6	7	8
Bonus PENGO @ 30,000	C	X	X	X	X	X	X	X
@ 50,000	0	X	X	X	X	X	X	X
Normal Play	X	X	X	X	X	0	X	X
Continuous Play	X	X	X	X	X	C	X	X
Difficulty: Hardest	X	X	X	X	X	X	C	C
Hard	X	X	X	X	X	X	0	C
Medium	X	X	X	X	X	X	C	0
Easy	X	X	X	X	X	X	0	0
5 PENGOs	X	X	X	C	C	X	X	X
4 "	X	X	X	0	C	X	X	X
3 "	X	X	X	C	0	X	X	X
2 "	X	X	X	0	0	X	X	X
Attract Sound On	X	C	X	X	X	X	X	X
" " Off	X	0	X	X	X	X	X	X
Upright	X	X	C	X	X	X	X	X
Cocktail Table	X	X	0	X	X	X	X	X

OPTION	SWITCH #2							
	1	2	3	4	5	6	7	8
4 Coin/1 Credit	C	C	C	C	C	C	C	C
3 Coin/1 Credit	C	C	C	0	C	C	C	0
2 Coin/1 Credit	C	C	0	C	C	C	0	C
1 Coin/1 Credit	C	C	0	0	C	C	0	0
1 Coin/2 Credit	C	0	C	C	C	0	C	C
1 Coin/3 Credit	C	0	C	0	C	0	C	0
1 Coin/4 Credit	C	0	0	C	C	0	0	C
1 Coin/5 Credit	C	0	0	0	C	0	0	0
1 Coin/6 Credit	0	C	C	C	0	C	C	C

OPTION SELECTION (cont.)

OPTION	SWITCH #2 1	2	3	4	5	6	7	8
2 Coin/1 Credit 4 Coin/2 Credit 5 Coin/3 Credit 6 Coin/4 Credit	0	C	C	0	0	C	C	0
2 Coin/1 Credit 4 Coin/3 Credit	0	C	0	C	0	C	0	C

OPTION	SWITCH #2 1	2	3	4	5	6	7	8
1 Coin/1 Credit 2 Coin/2 Credit 3 Coin/3 Credit 4 Coin/4 Credit 5 Coin/6 Credit	0	C	0	0	0	C	0	0
1 Coin/1 Credit 2 Coin/2 Credit 3 Coin/3 Credit 4 Coin/5 Credit	0	0	C	C	0	0	C	C
1 Coin/1 Credit 2 Coin/3 Credit	0	0	C	0	0	0	C	0
1 Coin/2 Credit 2 Coin/4 Credit 3 Coin/6 Credit 4 Coin/8 Credit 5 Coin/11 Credit	0	0	0	C	0	0	0	C
1 Coin/2 Credit 2 Coin/4 Credit 3 Coin/6 Credit 4 Coin/9 Credit	0	0	0	0	0	0	0	0

0 = Open C = Closed X = Not Used

PENGO™ CIRCUIT DESCRIPTION

PENGO is a microprocessor based, digital integrated-circuit computer video game. The heart of the computer is the Controller Chip (U2), a specially engineered IC for PENGO, used in Logic Board Assemblies 834-0386 and 834-5081. The 315-5010 part number MUST ALWAYS be used in these boards. Logic Board Assembly 834-5092 utilizes a Z-80A (P/N 315-0041) in the U2 Controller Chip location (Sht.1, Zone B2, of Drawing Number 834-0386). Although there are subtle programming differences between the boards, all three boards are schematically identical to 834-0386.

Master timing is crystal-driven at 18.432 MHz (X1, Zone D8, Sht.1, PENGO Logic, 834-0386) through U6, frequency divider (J-K Flip/flop) U1, applying a "driver" frequency of 6 MHz to binary counters U46, U56, and U65. Controller Chip timing (1H) is taken from the binary counters through U57 pin-3 (Sht.1, Zone B5) applied to Dual D-type Flip/flop U66, is referenced by U6 (Sht.1, Zone C3) and is finally applied to pin-6 of the Controller Chip. Additionally, our 6 MHz signal is used to create the horizontal reference and blanking frequencies for later integration with vertical timing for $\overline{\text{COMPSYNC}}$.

Self-test initiation comes from the Volume Control Block (800-3282) through P2 pin-12, P1 pin-K (Sht.6, Zone B7), appears as a LO at Driver/Multiplexer U22 (Sht.6, Zone B4), and is led to data bus line DB4 and DB5 for processing through Bus Transceiver U40 (Sht.1, Zone B1) to the Controller Chip U2. formal program interrupts ($\overline{\text{INT}}$) are felt at pin-16 of the Controller Chip (an edge-triggered LO) through U24 (Sht.1, Zone B4), clocked by signal INT from pin-4 of U27 (Sht.6, Zone D5) an eight-bit addressable latch, and is the result of Input/Output activity times with vertical blanking (an approximately 2 msec. instruction interrupt). The WAIT signal is used to synchronize that I/O activity during an interrupt to the Controller Chip U2. Three of the sixteen address lines pass through U39 (Sht.2, Zone D7), a decoder used to drive the Chip Select ($\overline{\text{CE}}$) inputs of the 2732 EPROMs U7, U8, U14, U15, U20, U21, U31 and U32 (all pin-18). The 2016 RAMs U19, and U30 (Sht.2, Zone C3) input the data bus through U38, a Bus Transceiver (Sht.2, Zone C2).

U9, U16, U22 and U26 are input ports (Sht.6, Zones B3 and B6), which along with option selection DIP SW 1 and DIP SW 2, multiplex player input information

onto the data bus. RGB monitor inputs are taken from P1 pins-T, 16, and U respectively (Sht.5, Zone C1). Working backwards from the output, U78 is the 32 X 8 bit PROM (Sht.5, C2) that in conjunction with U96 (Sht.5, Zone B6) an eight-digit Display Driver, selects color information from the data bus. Bus Driver U102 inputs Multiplexer U100 as well as interfacing timing for U101 (Sht.5, Zone B5). Composite Synchronization is taken from P1 pin-17 (Sht.5, Zone B1), through U69 to U35 (Sht.1, Zone C3) which "NANDs" horizontal and vertical timing to produce $\overline{\text{COMPSYNC}}$ for use with this monitor (200-0019). Clocked by our now familiar "driver" frequency, 6 MHz at pin-11, back on Sht.5, Zone C6, U89 interfaces the data bus to provide the "Color PROM" U88 (Sht.5, Zone C´) with the information it needs.

The PENGO Logic Board contains all sound circuitry used in the game. On Sht.7 of the Logic Board schematic (834-0386), data information is de-multiplexed by U34 (Sht.7, Zone C6), while the address is de-multiplexed at U43 (Sht.7, Zone D6). The resulting synchronized sound data is loaded into the RAMs U42 and U52, and are clocked out by U10 (Sht.3, Zone A6) and U70 (Sht.7, Zone B6) respectively. In addition to U70, sound programming is held by U51 (Sht.7, Zone C3) the output of which, together with RAM data, is applied to U41 (Sht.7, Zone D2). Switch/Driver U50 (Sht.7, Zone D1) then inputs Audio Amp U87 (Sht.7, Zone B2) with input level and volume control provided by VR1. The Volume Control pot located on the operator panel provides only minimal control.

SELF-TEST

The primary function of the self-test diagnostics are to verify proper operation of the game board, monitor color adjustments and to facilitate isolation of failures. Initialization is by the Self-Test Switch mounted on the Volume Control Block, just inside of the coin door at the front of the cabinet. Each test will run approximately 40 seconds unless interrupted by the One Player Start Button. Sequencing is as follows: on I.C. side → odd number | even numbered

Rom 1 (U7, U8)
Rom 2 (U14, U15)
Rom 3 (U20, U21)
Rom 4 (U31, U32)

1. Video RAM Check (RAM 1)
   Work RAM Check (RAM 2)
   - Error outputs are displayed in red.
2. EPROM Check (3 EPROMs total)
   - As above, error outputs are displayed in red.
3. Player Input Check
   - Press One Player Start Button twice to proceed to the next test.

PLAYER CONTROLS

1P	2P
UP	OFF
DOWN	OFF
LEFT	OFF
RIGHT	OFF
SHOOT	OFF

4. Color Pattern Test
   - Displays four colors: red, green, blue, and white.
     For use in color purity adjustments.
5. DIP Switch Settings
   - Press the 1 P Start Button or wait approximately 40 seconds to proceed to the next test.

	DIP SWITCHES 1 2 3 4 5 6 7 8
SW 1	0 0 0 0 0 0 0 0
SW 2	0 0 0 0 0 0 0 0

6. Coin Switch Test
   - This test checks the timing of the coin switch. Coin mech 1 will appear as A, and coin mech 2 as B. Either letter appearing within the BAD area indicates switch mis-timing. Adjust a faulty coin switch by bending the trip wire up or down, slightly.

TROUBLESHOOTING TIPS

The logic board edge connector pins are identified by numbers on the component side of the board, and letters on the opposite of the board.

To aid in the isolation of problems on the PENGO™ Logic Board, the following table lists typical symptomatic indication as to specific EPROM failure:

EPROM	SYMPTOM
1738	Display freezes
1739	Program resets indicating 60 credits at game start, display goes "mosaic"
1740	Coin meter runs continuously, player start & bonus displays pulse.
1741	Reset line pulses HI & LO, display is scrambled.
1742	In the ATTRACT mode, once characters enter the field the game resets.
1743	Program resets following 1st round.
1744	No effect on display.
1745	Sound off, continuous tone.
1640	White screen, characters block shpaed.
1695	No effect on display.

Failure in the following ICs generally result in these indications:

IC51	No sound.
IC70	No sound.
IC78	An all green screen.
IC88	Random color patterns.
IC96	Random object patterns.

Reset problems can usually be isolated to ICs 23,27 & 28. Normally at program reset:

IC23 pin - 2 is a square wave pulse.

IC23 pin - 15 is LO.

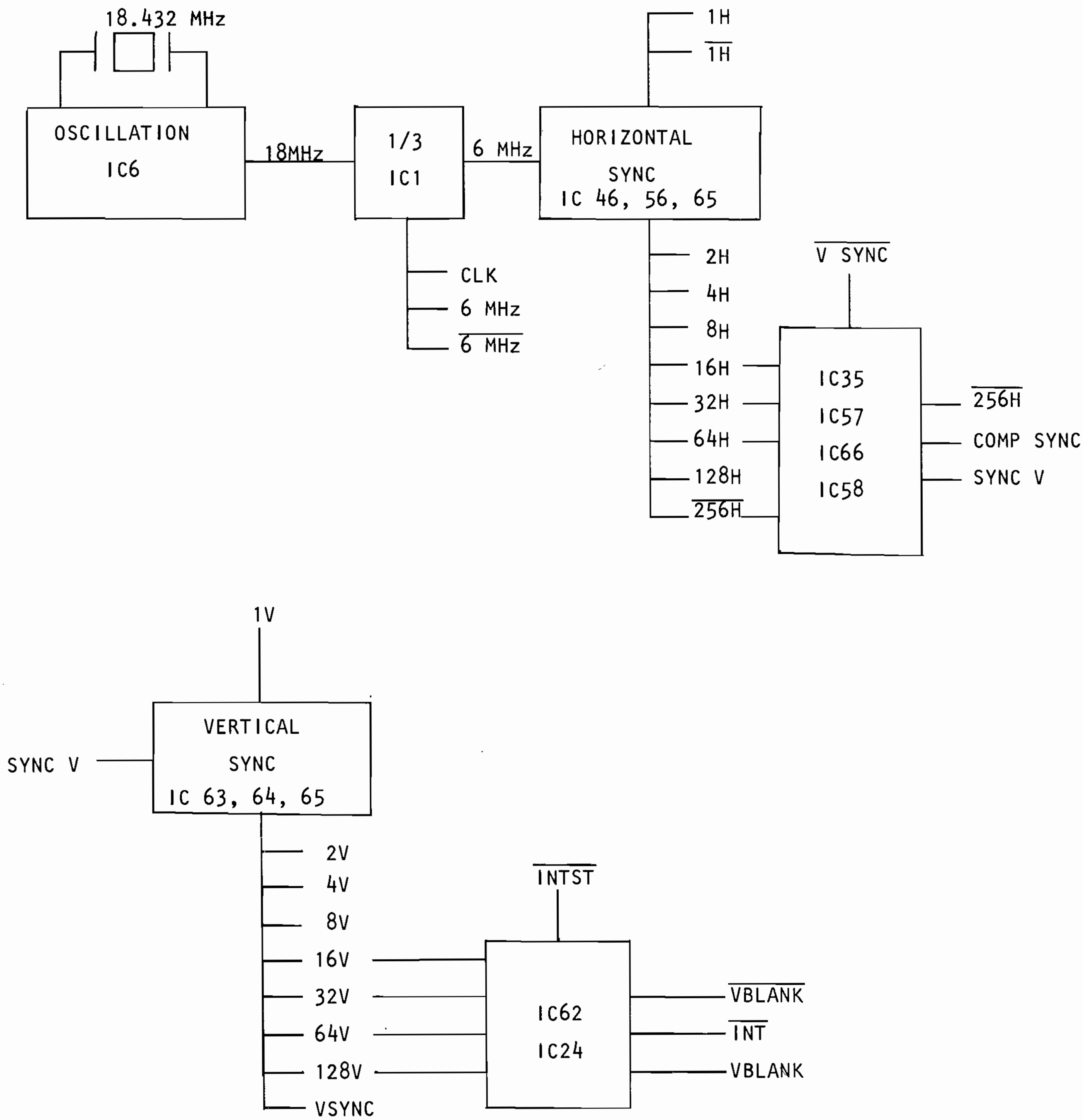
IC27 pin - 15 is HI.

A loss of 5VDC can be quickly spotted by the red LED being off.

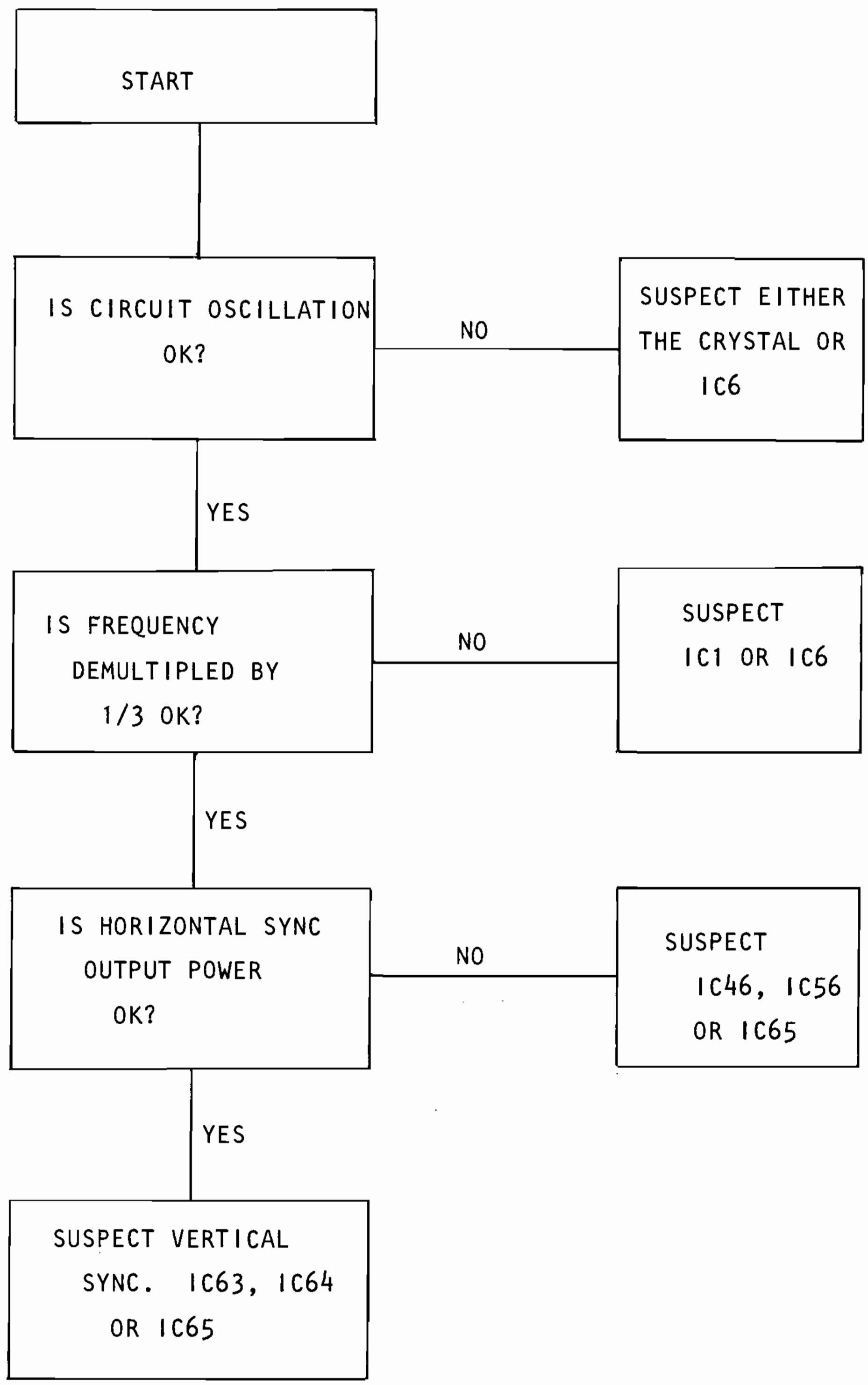
Lines across the screen (such as experienced by RAM failure) may be traced to loss of CH1 or CH2 signals originating from IC 104.

Tables on the following pages should help to further isolate problems:

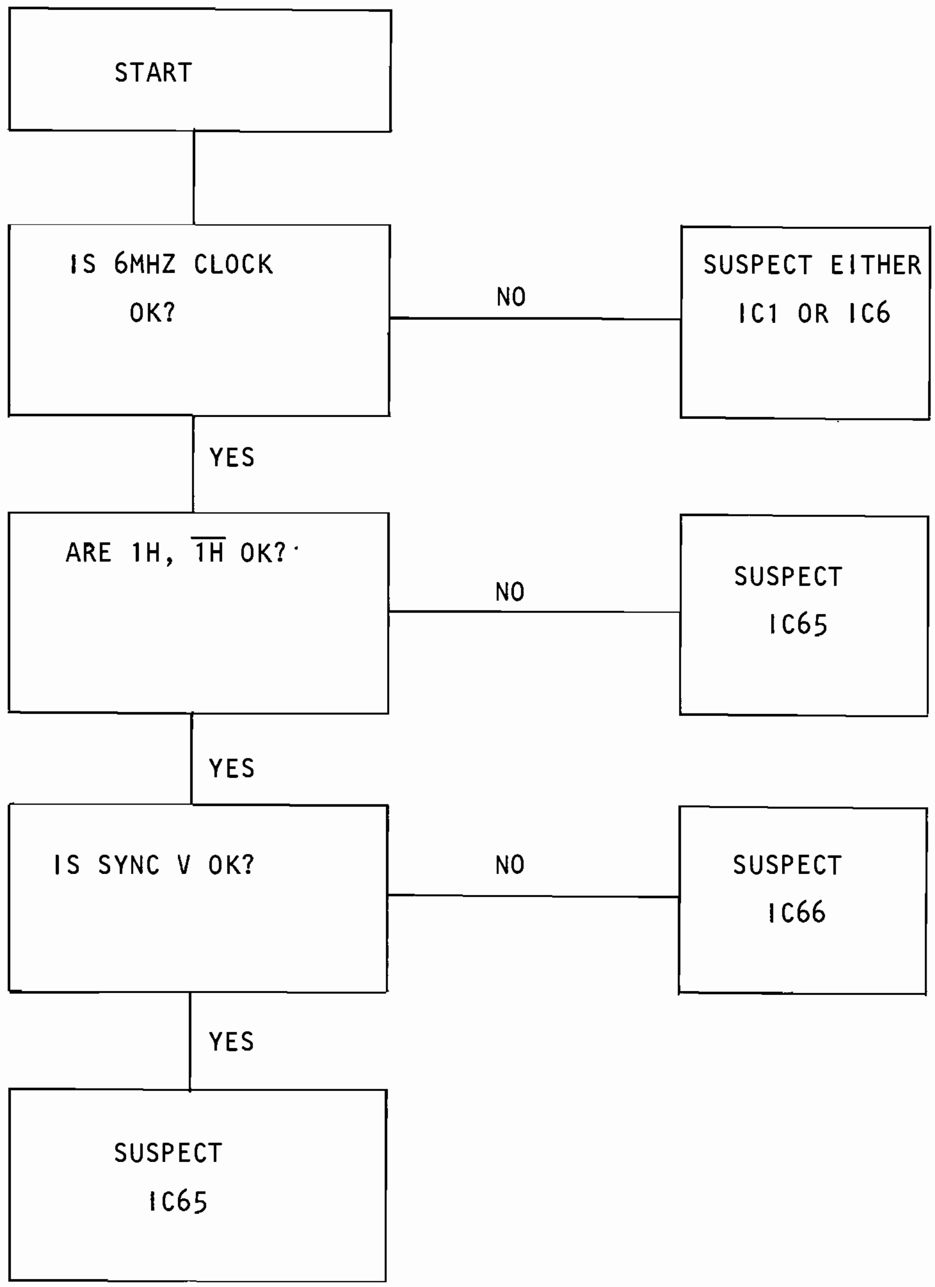
BLOCK DIAGRAM FOR OSCILLATION, HORIZONTAL AND VERTICAL SYNC



PICTURE DRIFTS AWAY



PICTURE WILL NOT APPEAR



ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
1	130-0020	1	Speaker 6 X 9, 10W	
2	130-0002	1	Speaker Cover	
3				
4	140-0021	1	Cover J - Box	
5	140-0079	1	Cabinet, Upright	
6				
7	220-0178	2	Draw Catch	
8				
9	250-0038	1	Molding Strip	
10	253-0281	1	Envelope, 12 X 15, Heavy Duty, Clear 10 Mil PVC	
11	250-0356	2	Bracket Clr. Mon. Support	
12	250-0568	1	Moulding, Logo Panel	
13	420-0825	1	Graphic, Left Side	
14	420-0826	1	Graphic, Right Side	
15	253-0238	1	Plastic Bag 3.00 X 4.00 Transparent, Zip Lock	
16	253-0288	1	Panel Logo	
17	275-0087	1	Glass, Panel, Monitor	
18	280-0475	A/R	Staple	
19				
20	280-0005	40	Cable Tie	
21				
22	289-0002	1	Cable Clamp, 250 Nylon	
23	281-0014	4	SCR Oval HD Phil #8-32 X 1 3/4"	
24				

TOP GAME PENGO ASSEMBLY DRAWING NUMBER 700-0105-00

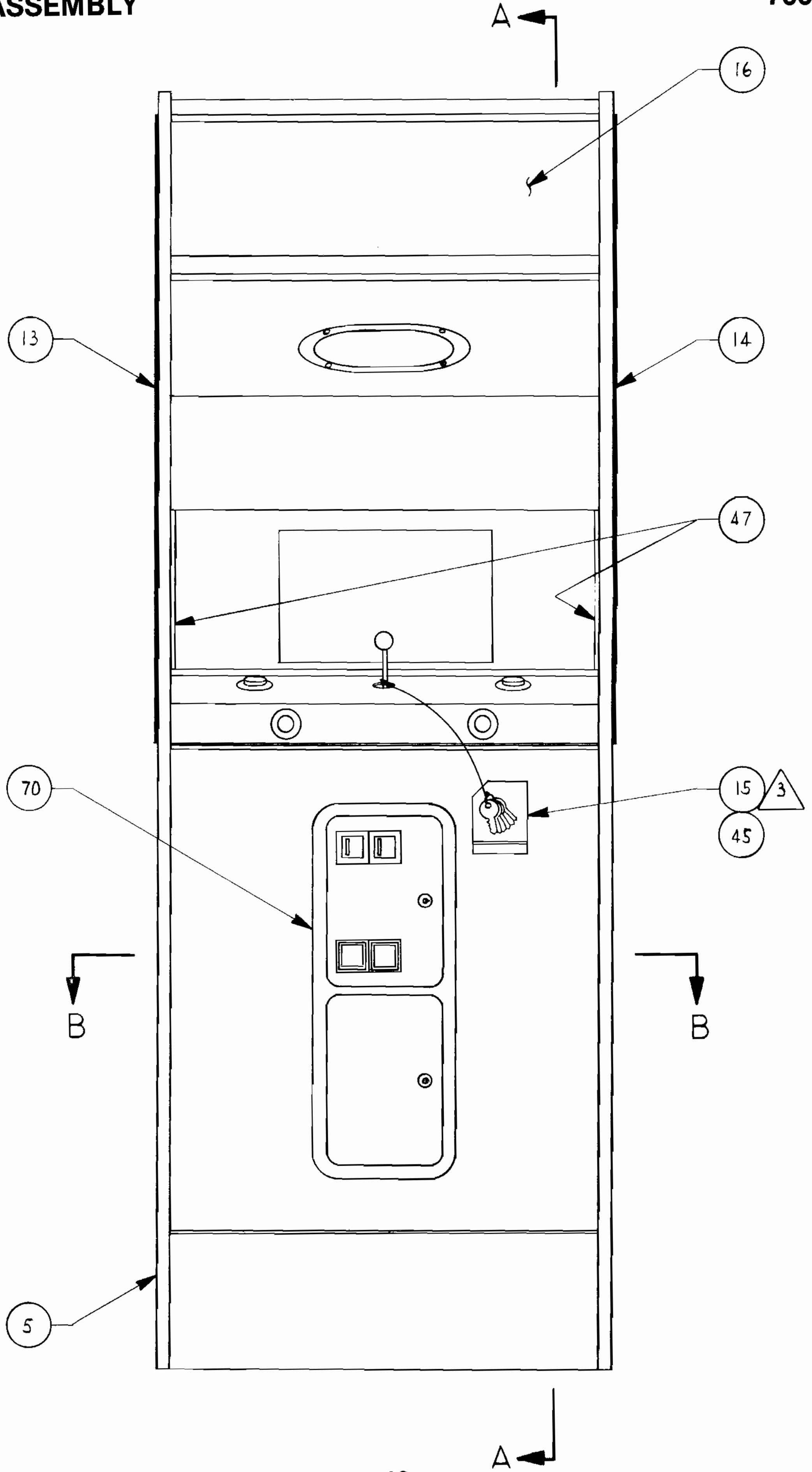
ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
25	281-0134	4	SCR 8-15 X 3/4 IN PNHD S/M Blk	
26	281-0044	8	SCR, Phil PN HD #8 X 3/4" Sht Mtl	
27	281-0044	4	SCR, Phil PN HD #8 X 1 1/4" Sht Mtl	
28	281-0045	7	SCR, Phil PN HD #10 X 3/4" Sht Mtl	
29	282-0017	4	Bolt, Hex 1/4-20 X 1 1/2 Lg Mach	
30				
31	282-0005	2	Bolt, Carriage #10 -24 X 1 1/4"	
32				
33	283-0060	4	Washer, Fl 1/4 - 1.250 Lrg O.D. Fender	
34	283-0071	1	Nut, Wing #10	
35	283-0072	4	Nut, Hex #8	
36	283-0072	2	Nut, Hex #10	
37	283-0061	4	Washer, Lock Split 1/4	
38				
39	283-0060	16	Washer, Flt #8	
40				
41	283-0061	12	Washer, Lock Split #8	
42	283-0061	9	Washer, Lock Split #10	
43	283-0060	3	Washer, Flat #10 .406 O.D.	
44	320-0020	2'	Selant Foam	
45	320-0051	1'	Tie Ribbon, Wire, Plastic Coated	

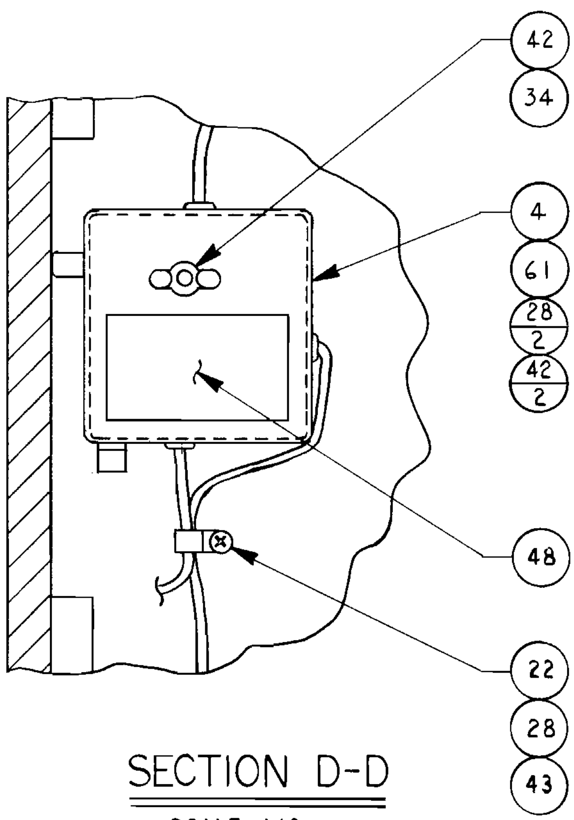
ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
46	390-0019	1	Lamp Fluor	
47	320-0055	3.25'	U-Channel, Plastic, Blk	
48	420-0030	1	Decal Caution 115V	
49				
50	420-0568	1	Decal FCC	
51	420-0815	1	Box Decal	
52	420-0811	1	Manual	
53	420-0812	1	Graphic Interior	
54				
55	420-0713	1	Advertising Pouch	
56	420-0793	1	Decal, Gremlin Toll Free Numbers	
57	420-0827	1	Light Baffle	
58	800-0408	1	Monitor Ground Strap Assy.	
59	800-3295	1	Assy. Speaker Harn	
60	800-0140	1	Assy. Clr Monitor 19"	
61	800-0145	1	Assy J - Box	
62				
63	800-0147	1	Assy. Fluor Lamp 2	
64				
65	800-0408	1	Control Panel Ground Strap	
66	800-0411	1	Assy. AC Harn	
67	800-3280	1	Assy. Control Panel Complete	
68				

ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
69	800-3283	1	Assy. Harn Video Interface	
70	800-3294	1	Assy. Coin System	
71	800-3286	1	Assy. Component Shelf	
72				
73				
74				

TOP ASSEMBLY

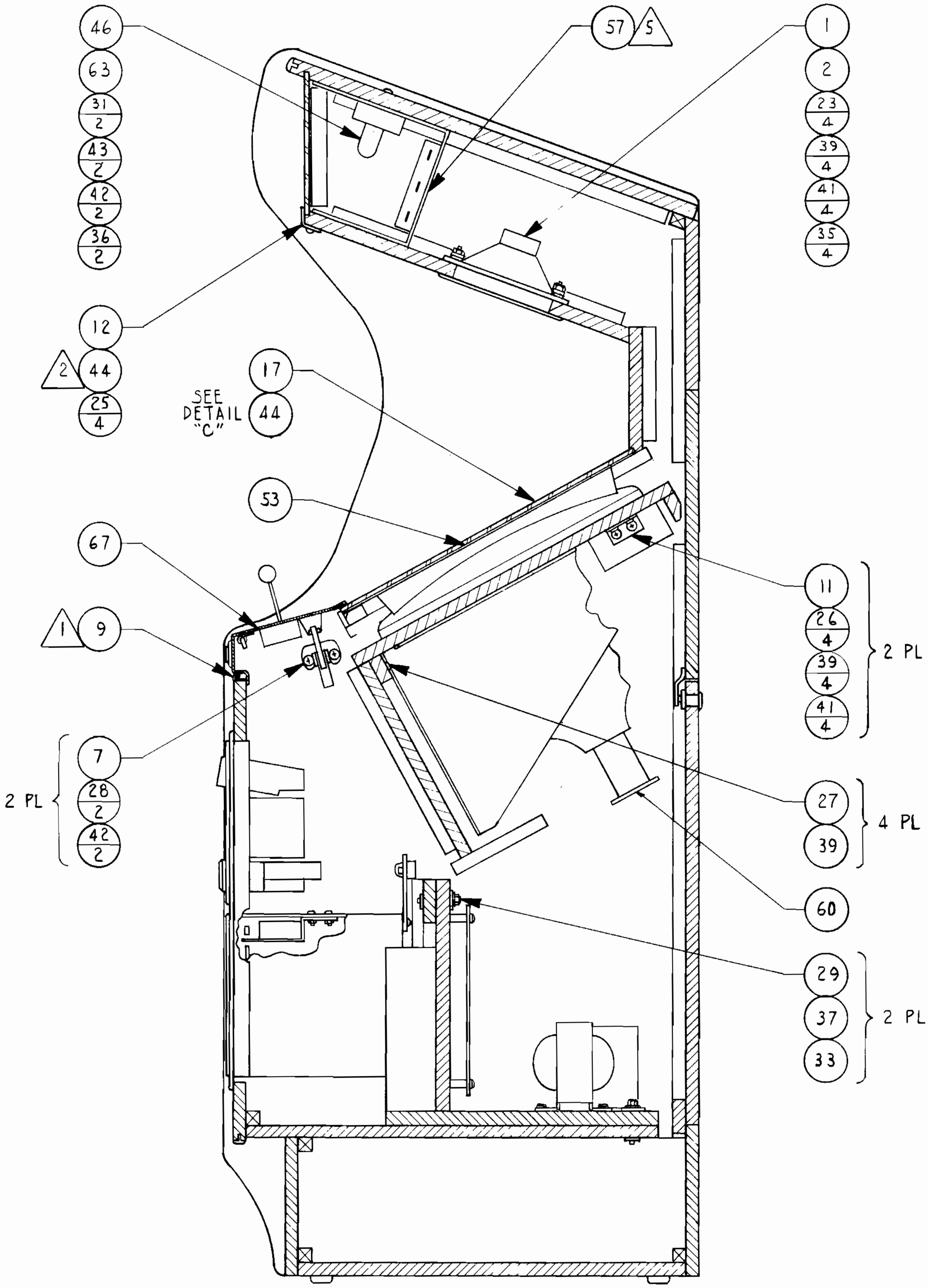
700-0105



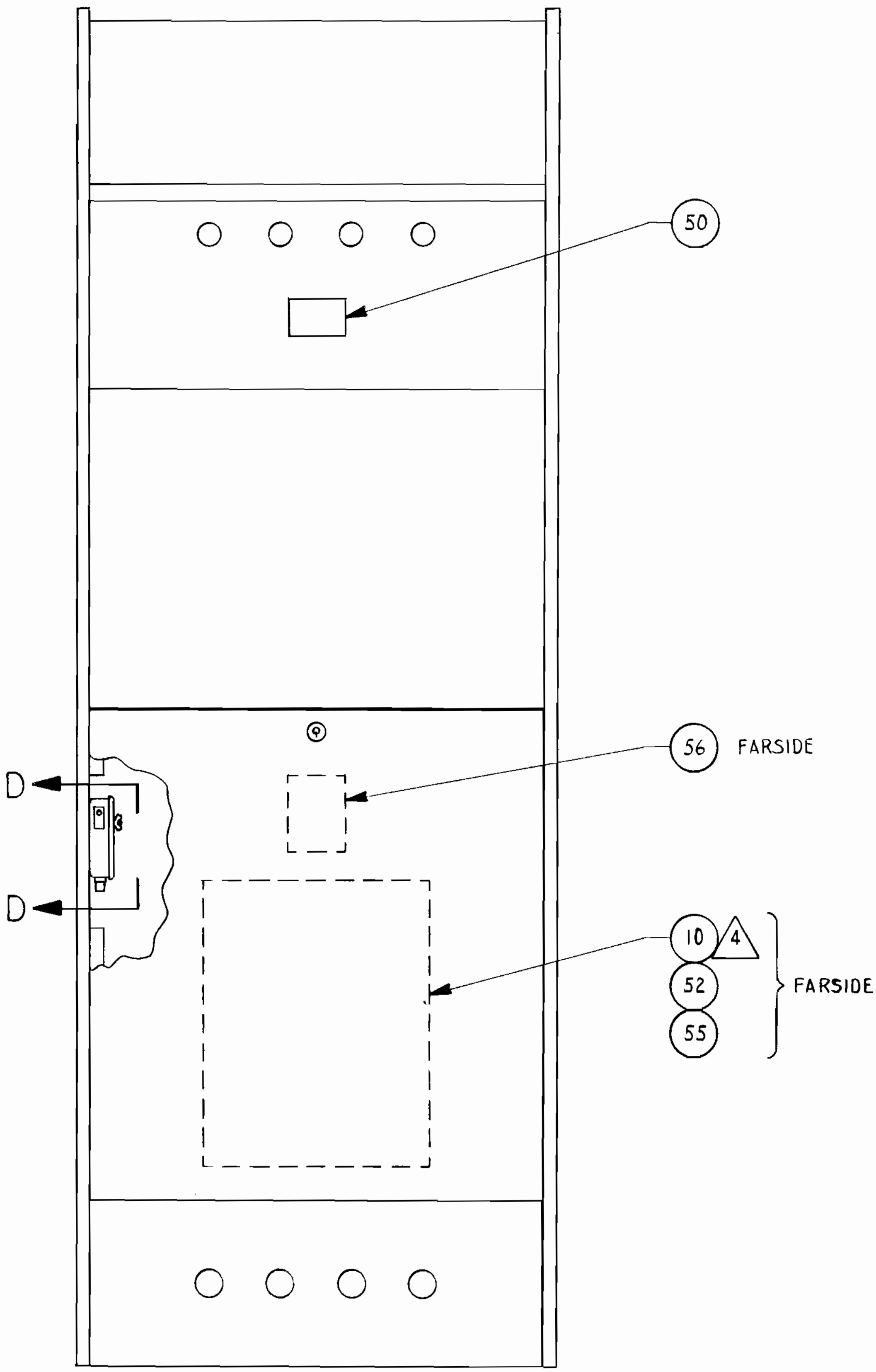


SECTION D-D

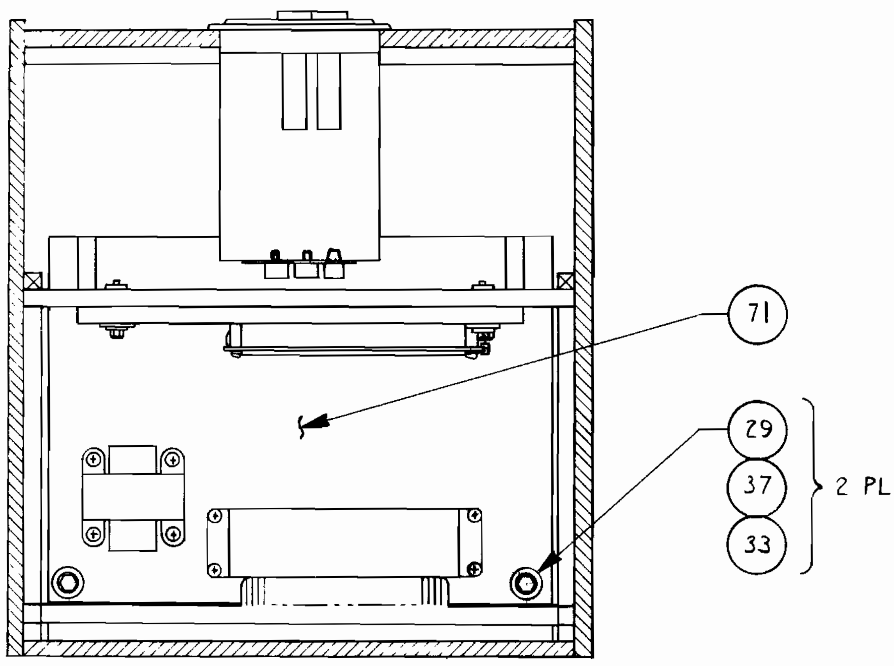
SCALE 1/2


46
63
31/2
43/2
42/2
36/2
57
5
1
2
23/4
39/4
41/4
35/4
12
2
44
25/4
SEE DETAIL "C"
17
44
53
67
1
9
11
26/4
39/4
41/4
2 PL
7
28/2
42/2
2 PL
27
39
4 PL
60
29
37
33
2 PL

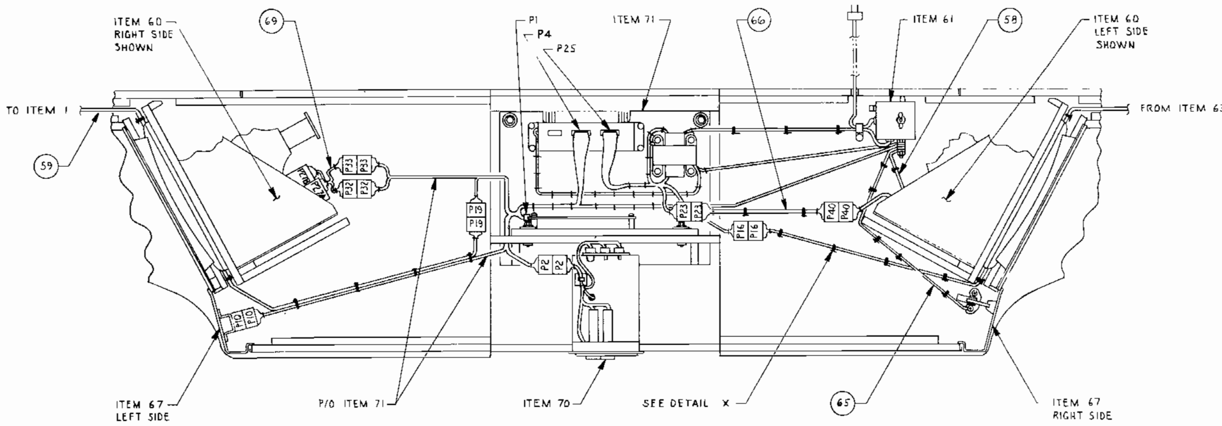
SECTION A-A

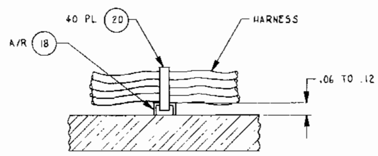


REAR VIEW



SECTION B-B



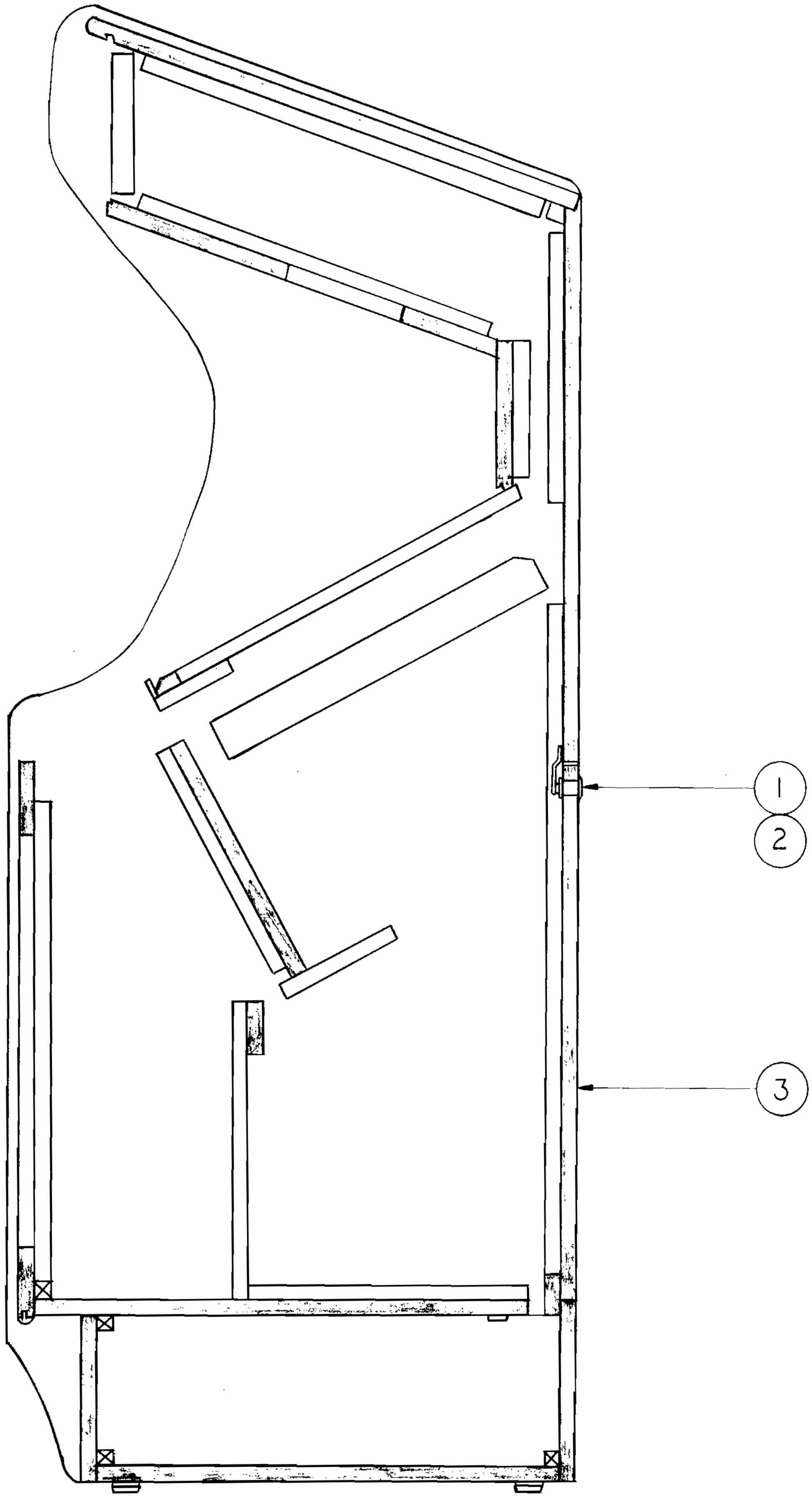


DETAIL X 6
NO SCALE

CABINET UPRIGHT

DRAWING NUMBER 140-0079

ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION
1	220-0212-00	1	Lock
2	250-0507-00	1	Retainer, Lock
3	252-0196-00	1	Panel, Access, Rear


1
2
3

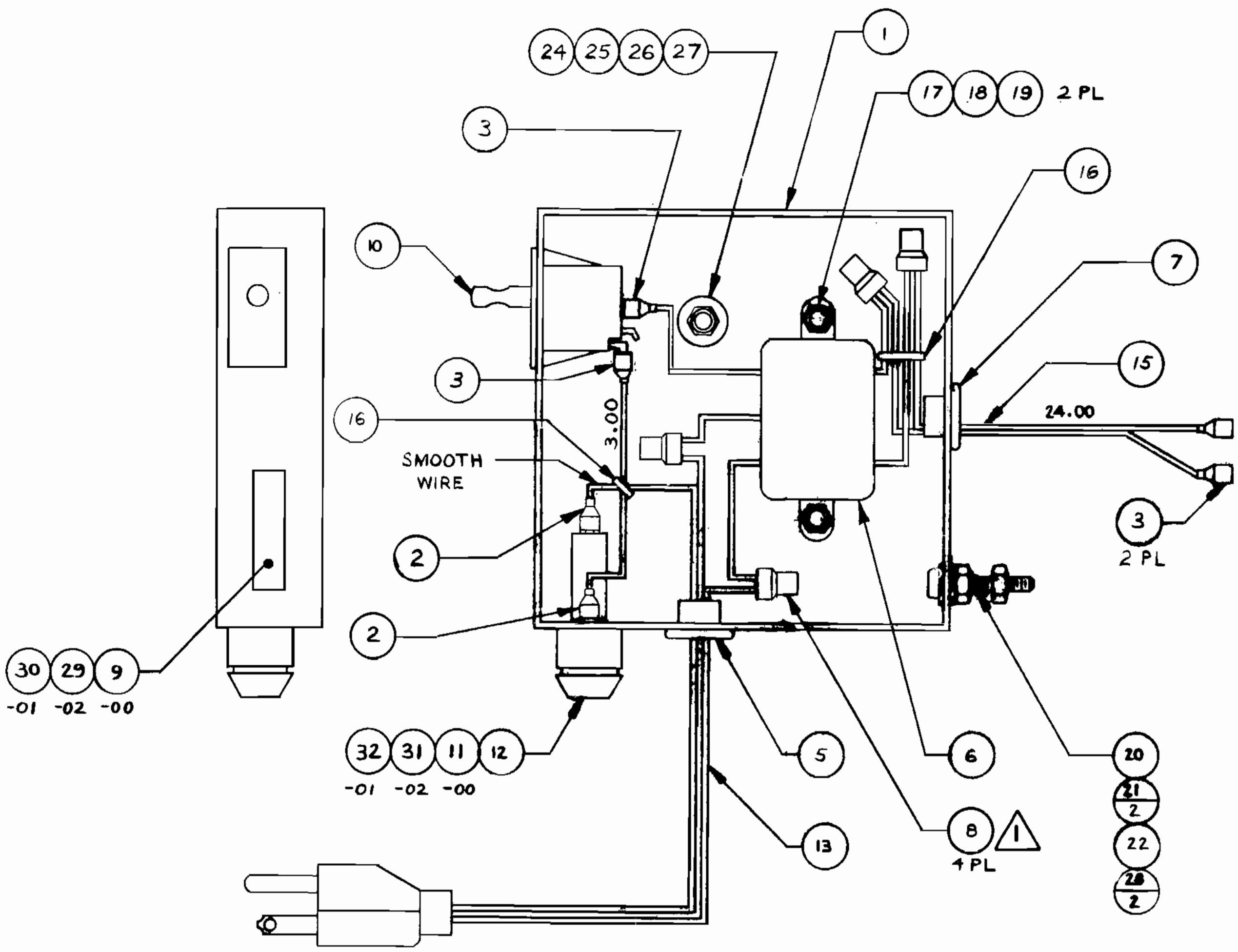
A.C. JUNCTION BOX ASSEMBLY DRAWING NUMBER 800-0145-00

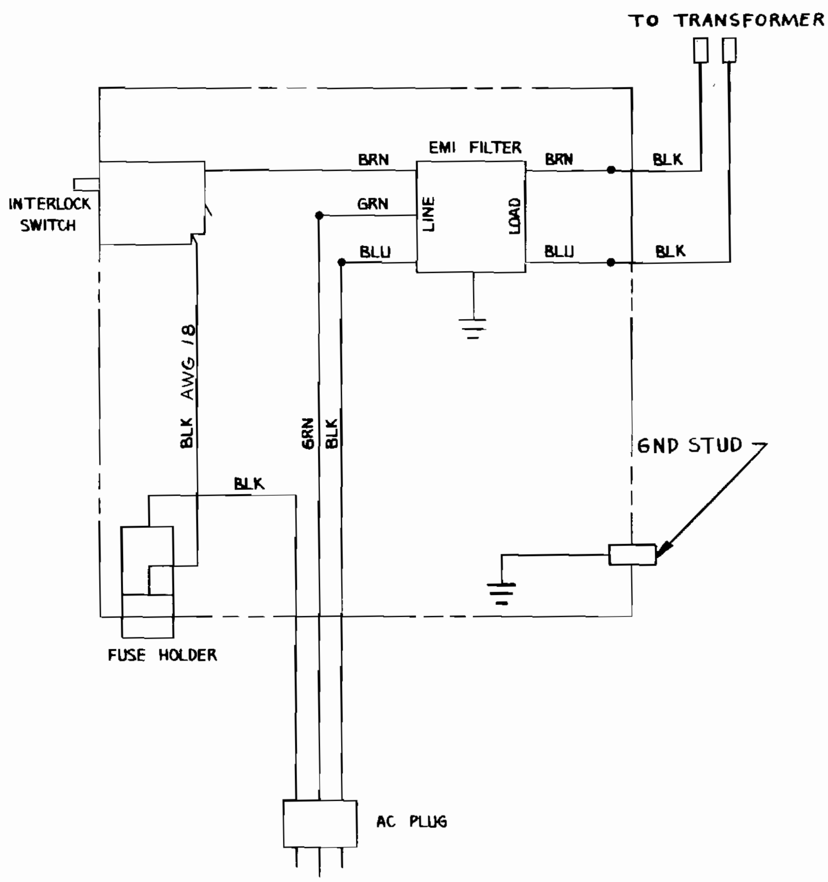
ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
1	140-0020	1	Junction Box Metal	
2	211-0165	2	Conn Quick Fem Fully	.250 X .032 (AWG 18-22)
3	211-0164	4	Conn Quick Fem Fully	.187 X .020 (AWG 18-22)
4				
5	280-0361	1	Bushing S/Rel AC Cord	
6	270-0001	1	Filter EMI	
7	280-0007	1	Bushing S/Rel 1/2	
8	280-0362	4	Electric Crimp Sleeve Awg 24 - 18	
9	420-0598	1	Decal 2 Amp Fuse	
10	510-0013	1	Switch SPDT Cherry	
11	514-0001	1	Fuse 2 AMP 250V S.B.	
12	514-0005	1	Holder Fuse	
13	600-0001	1	Cord Line 3 Cond.	
14				
15	600-0079	2'	Cord Line Zip	
16	280-0005	2	Cable Tie	
17	281-0002	2	SCR PN Hd Phil #6-32 x .625 Mach	
18	283-0022	2	Nut Hex Hd #6-32 Mach	
19	284-0042	2	Washer Lock Int. Tooth #6	
20	281-0004	1	SCR PN Hd Phil #8-32 x .750 Mach	
21	283-0024	2	Nut Hex Hd #8-32 Mach	
22	284-0044	1	Washer Lock Int. Tooth #8	

ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
23				
24	284-0007	1	Washer Flat Std O.D.#1/4	
25	283-0025	1	Nut Hex HD #10-24 Mach	
26	282-0005	1	Bolt Carriage #10-24 X 1.750 Mach	
27	310-0016	1	Insul TBG .187 ID	
28	284-0004	2	Washer Flat Std O.D. #8	

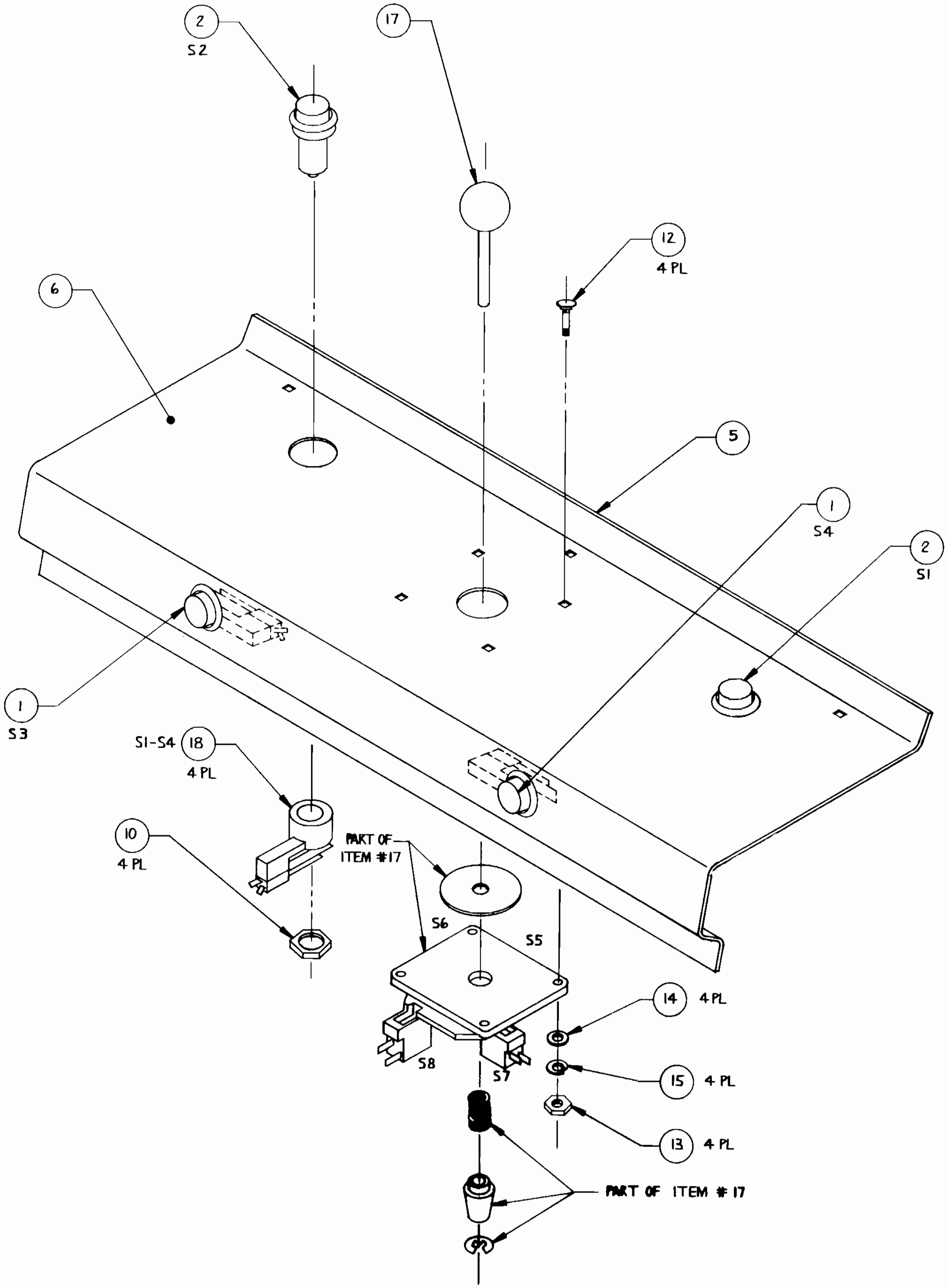
ASSY AC JUNCTION BOX

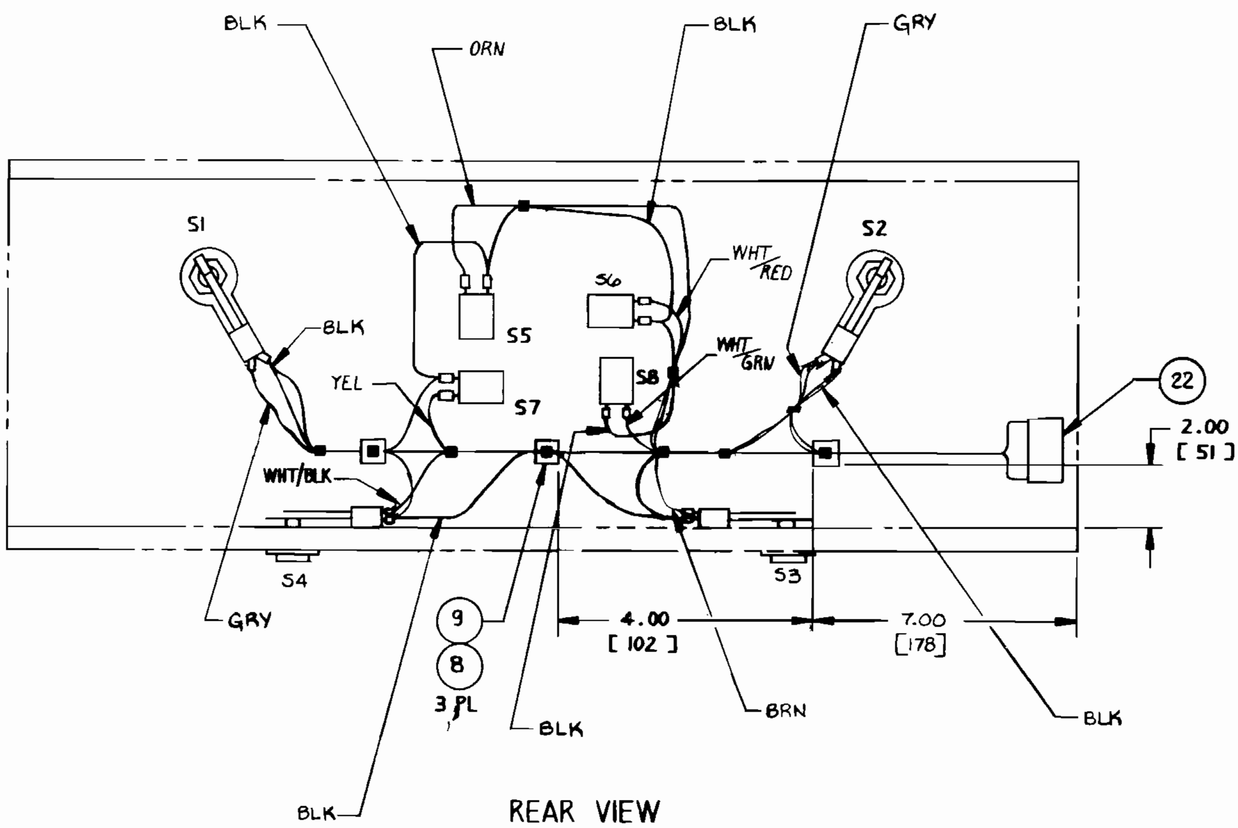
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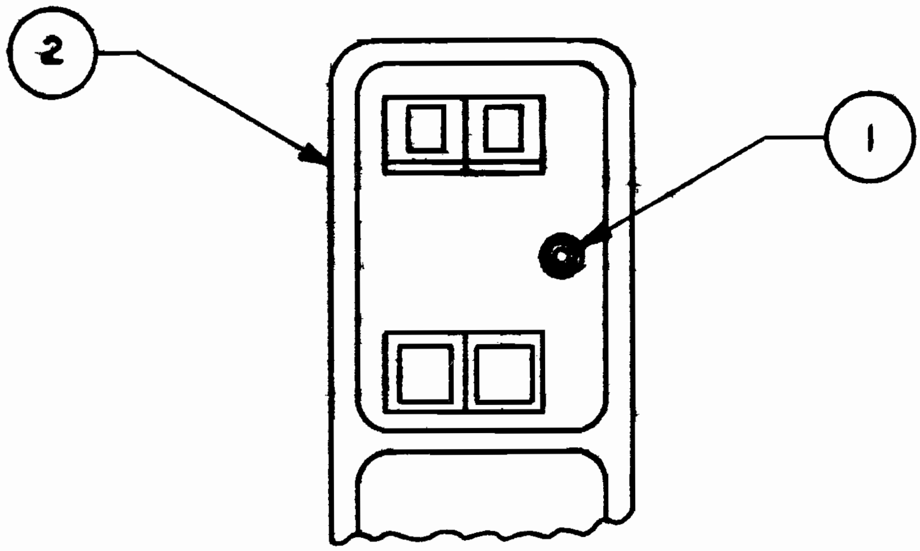

TO TRANSFORMER
EMI FILTER
BRN
BRN
BLK
INTERLOCK SWITCH
GRN
LINE
LOAD
BLU
BLU
BLK
BLK AWG 18
GRN
BLK
GND STUD
BLK
FUSE HOLDER
AC PLUG

ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
1	240-0009	2	Button Plunger Yellow	
2	240-0006	2	Button Plunger Red	
3				
4				
5	250-0563	1	Subpanel Metal	
6	253-0289	1	Graphic Control Panel	
7				
8	280-0005	7	Cable Tie	
9	280-0327	3	Base Tie Wrap	
10	280-0329	4	1/2" - 13" Hex Pal Nut	
11				
12	282-0005	4	Bolt #10 - 24 X .750 Crg. Mach.	
13	283-0025	4	Nut Hex Mach #10 - 24	
14	284-0016	4	Washer Flt SM O.D. #10	
15	284-0036	4	Washer Lock Split #10	
16				
17	510-0059	1	Joystick 4 Way Long Shaft	S5 - S8
18	510-0064	4	Switch Pushbutton Metal Panel	S1 - S4
19				
20				
21				
22	800-3293	1	Control Panel Harn Assy.	

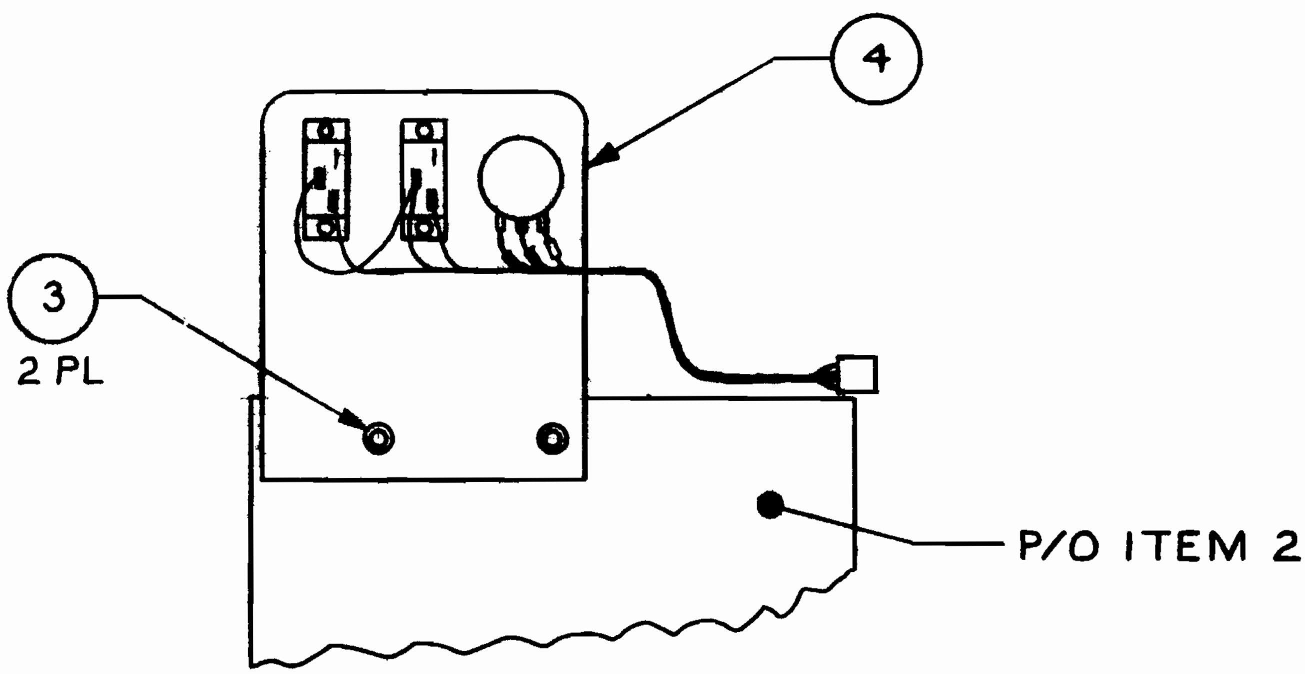

2
S2
17
12
4 PL
6
5
1
S4
2
S1
1
S3
S1-S4 18
4 PL
10
4 PL
PART OF
ITEM #17
S6
S5
14 4 PL
S8
S7
15 4 PL
13 4 PL
PART OF ITEM # 17


BLK
ORN
BLK
GRY
S1
S2
WHT/RED
S6
S5
BLK
WHT/GRN
YEL
S8
S7
22
2.00
[51]
WHT/BLK
S4
S3
GRY
9
8
3 PL
4.00
[102]
7.00
[178]
BLK
BRN
BLK
BLK
REAR VIEW

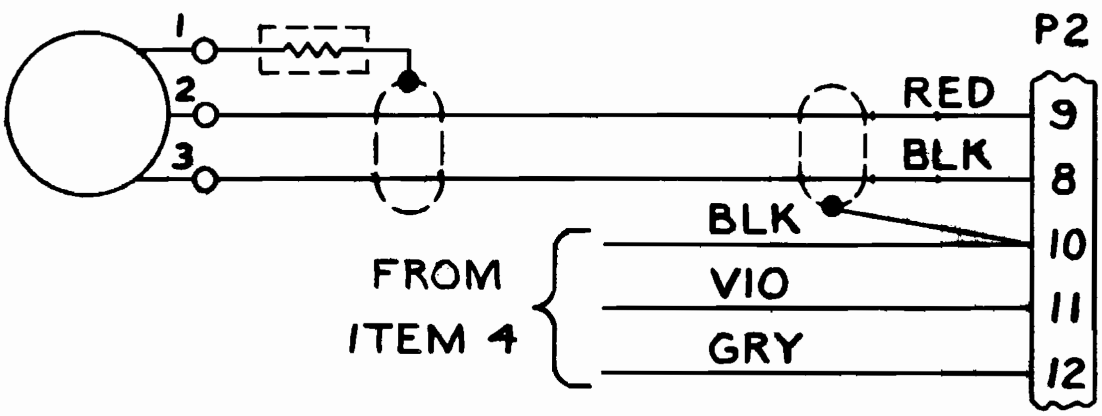
ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
1	220-0212	1	Lock Panel 4-Way	
2	220-0265	1	Coin Mech-DBL Frame	Mini-Door
3	285-0001	2	RVT .125 DIA x .250 Lg	MDRL Pull, AL
4	800-3282	1	Vol Cont Blk Assy.	



FRONT VIEW

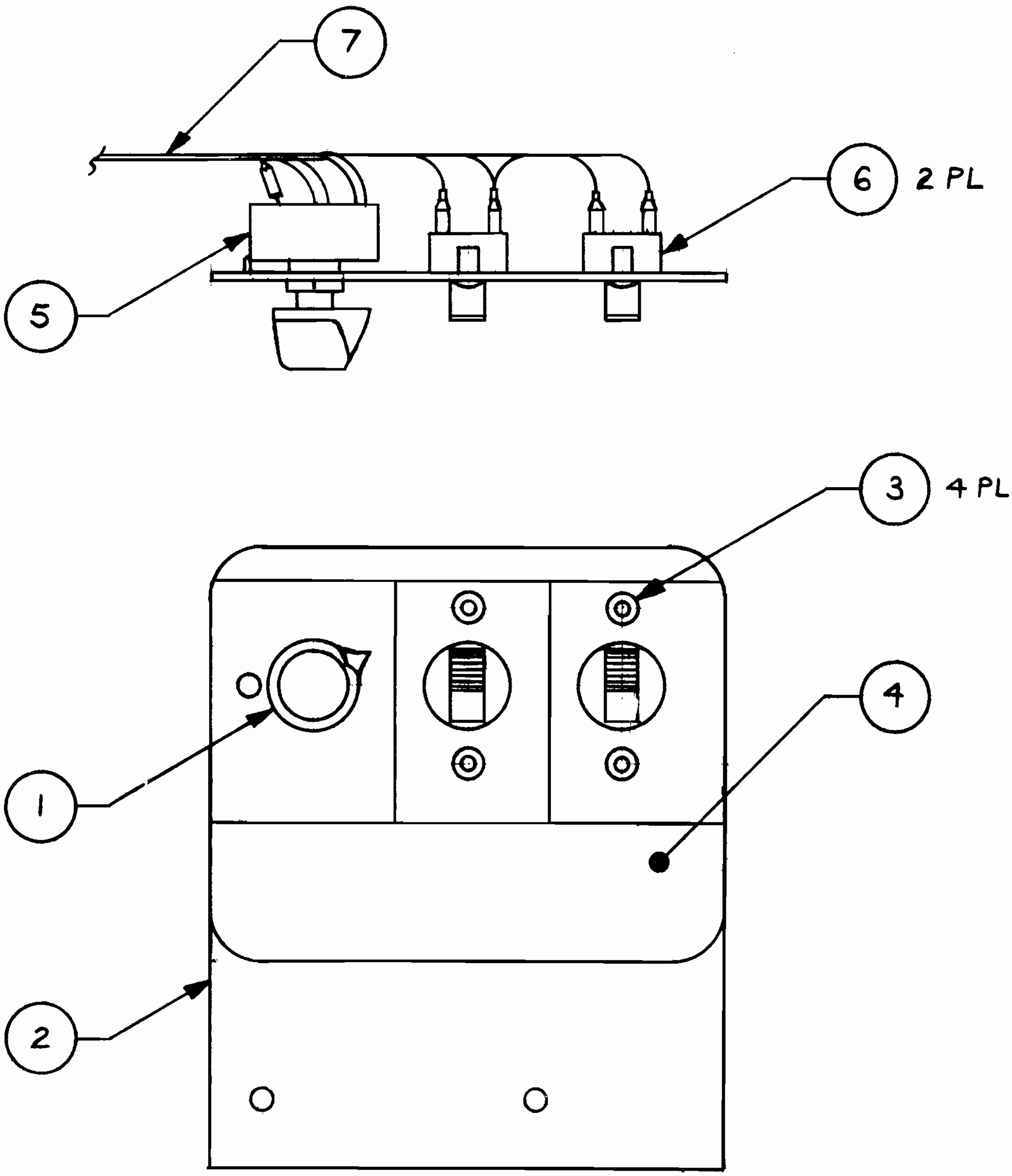


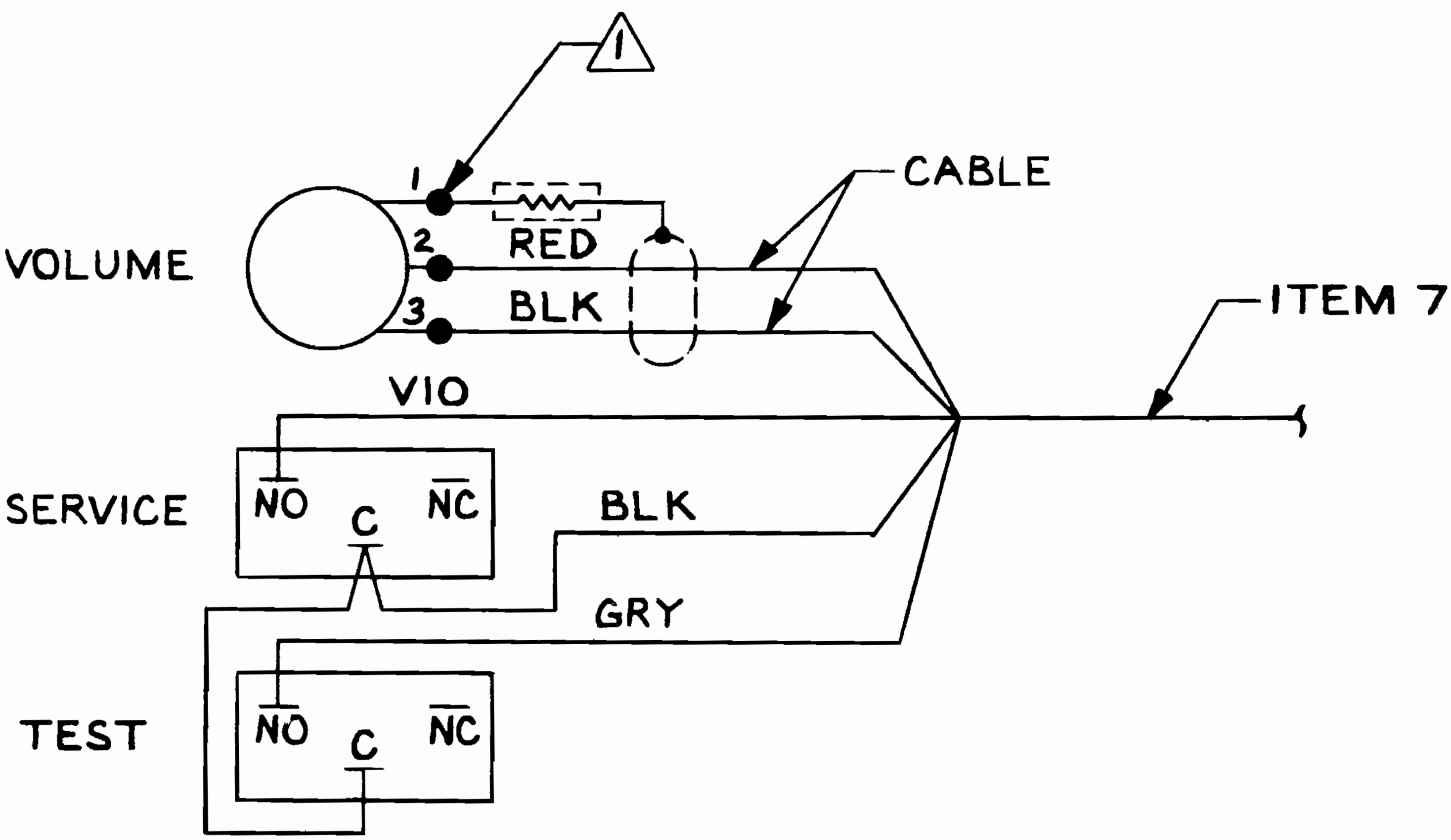
REAR VIEW OF
COIN ENCLOSURE


1
2
3
P2
RED
BLK
BLK
FROM
ITEM 4
VIO
GRY
9
8
10
11
12

VOLUME CONTROL BLOCK ASSEMBLY DRAWING NUMBER 800-3282-00

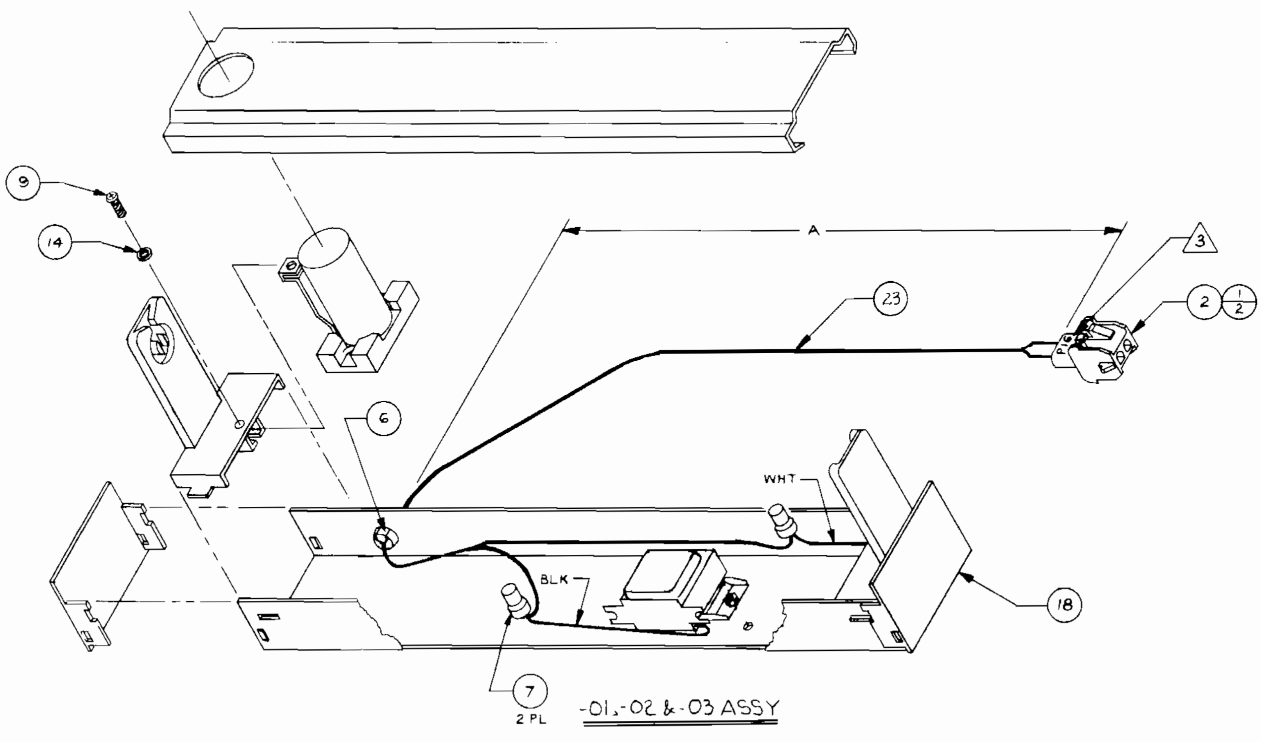
ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
1	240-0001	1	Knob Vol Cont	
2	250-0569	1	Brkt Vol Cont Blk	
3	285-0001	4	Rivet .125 Dia x .250 Mdrl Pull Dome Hd Al	
4	420-0007	1	Decal, E-Z Adjust Cont	
5	475-0007	1	Pot 10K Car Pnlmt	
6	510-0051	2	Sw Pshbtn Slide	
7	800-0407	1	Vol Cont Blk Harn	


7
6
2 PL
5
3
4 PL
4
1
2

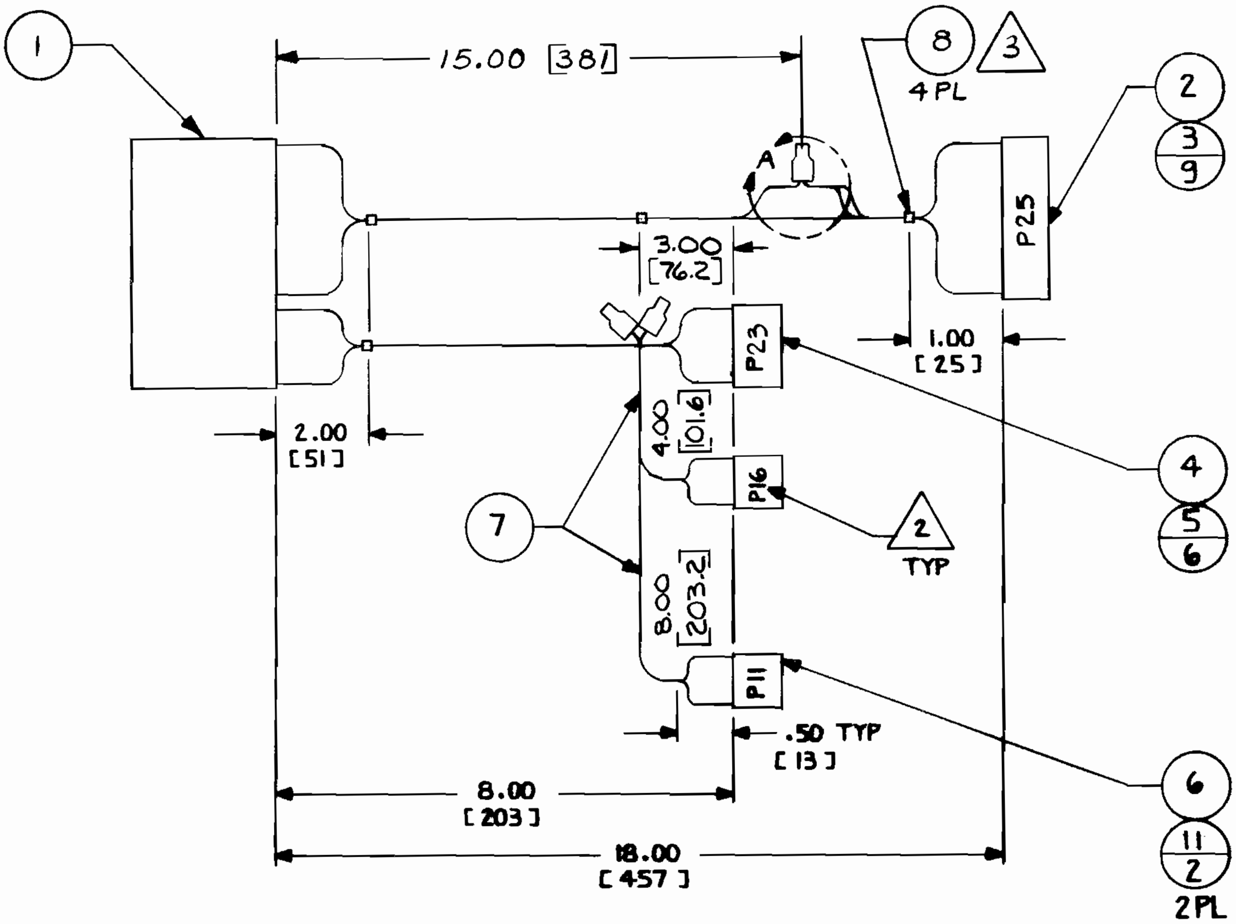

1
CABLE
1
2
3
RED
BLK
VOLUME
ITEM 7
VIO
SERVICE
NO
C
NC
BLK
GRY
TEST
NO
C
NC

ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
1	211-0041	2	Conn Pin AMP	
2	211-0044	1	Conn Cap AMP 2 Pin	
3				
4				
5				
6	280-0361	1	Bshg Str RLF AC Cord	
7	280-0362	2	Elec CRP SL 24-18 Awg	
8				
9	281-0002	1	SCR #6-32 x 3/8" PN HD Mach	
10				
11				
12				
13				
14	284-0002	1	Washer Flat Std. O.D. #6	
15				
16				
17				
18	390-0117	1	Fluor Lamp FXT 18 IN U.L.	
19				
20				
21				
22				
23	600-0079	7.6'	CA 2 Cond Zip Cord	

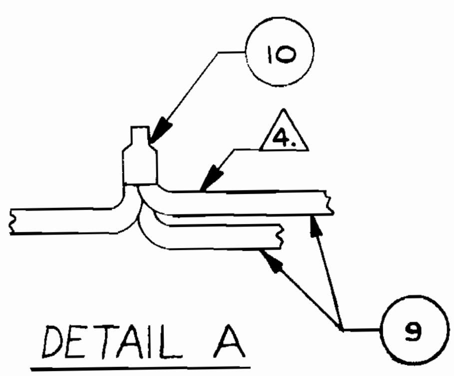
ASSY FLOUR LAMP 2 800-0147



ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
1	560-0055	1	Transformer G-80 Power Supply	
2	212-0016	1	Conn FEM 10 Pin	
3	211-0005	9	Conn Crimp	
4	211-0045	1	Conn Plug AMP 6 Pin	
5	211-0042	6	Conn Socket	
6	211-0043	2	Conn Plug AMP 2 Pin	
7	600-0079	1'	Zip Cord	
8	280-0005	4	Cable Tie	
9	600-0092	.5'	Wire 18 Awg Blk Electrical Hookup Stranded	
10	280-0359	3	Electric Crimp Sleeve	
11	211-0077	4	Conn Term Socket 20-14 Awg	

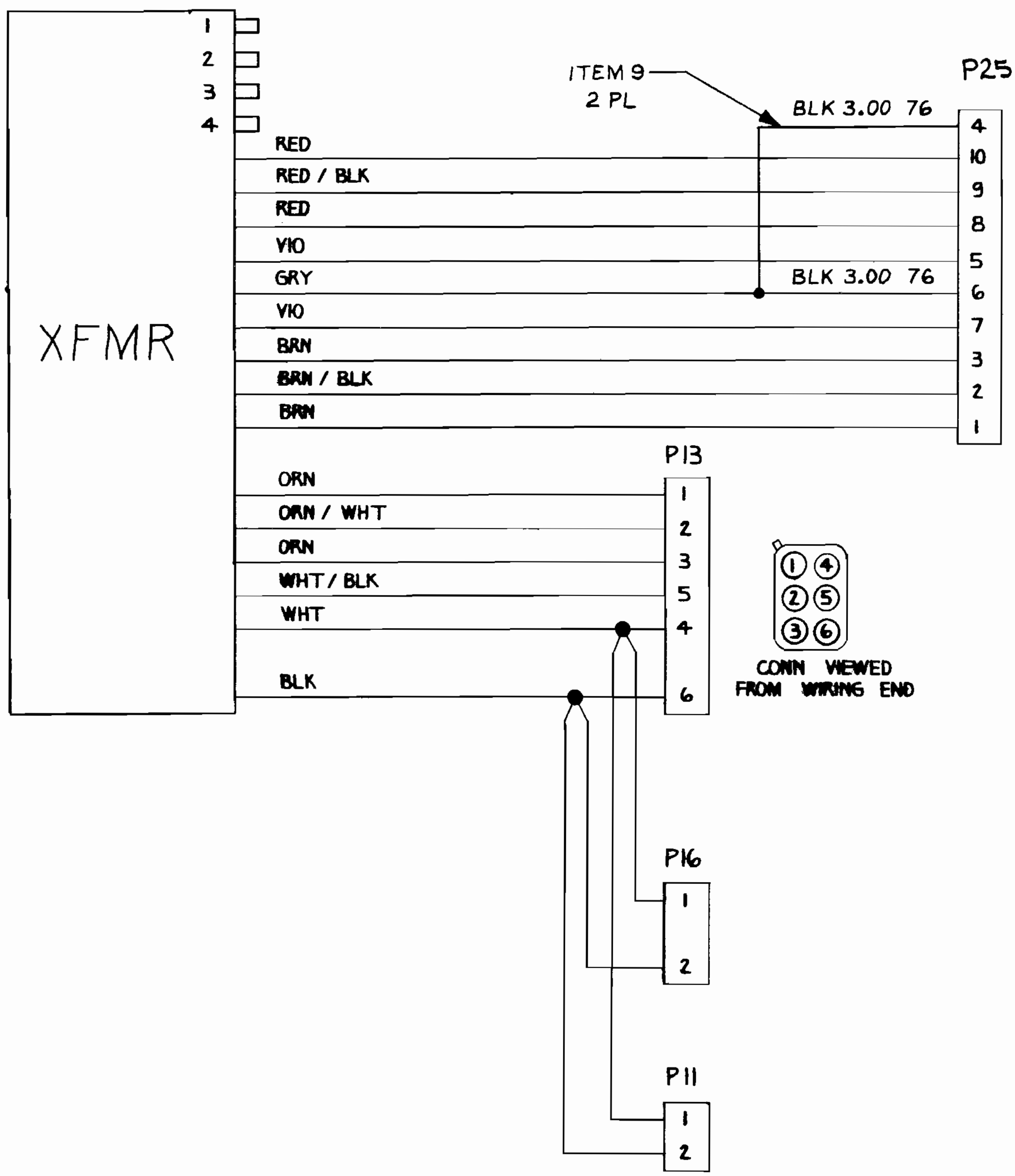


1
15.00 [381]
8
3
4 PL
2
3
9
A
P25
3.00
[76.2]
1.00
[25]
P23
2.00
[51]
4.00
[101.6]
P16
4
5
6
7
2
TYP
8.00
[203.2]
P11
.50 TYP
[13]
8.00
[203]
18.00
[457]
6
11
2
2PL



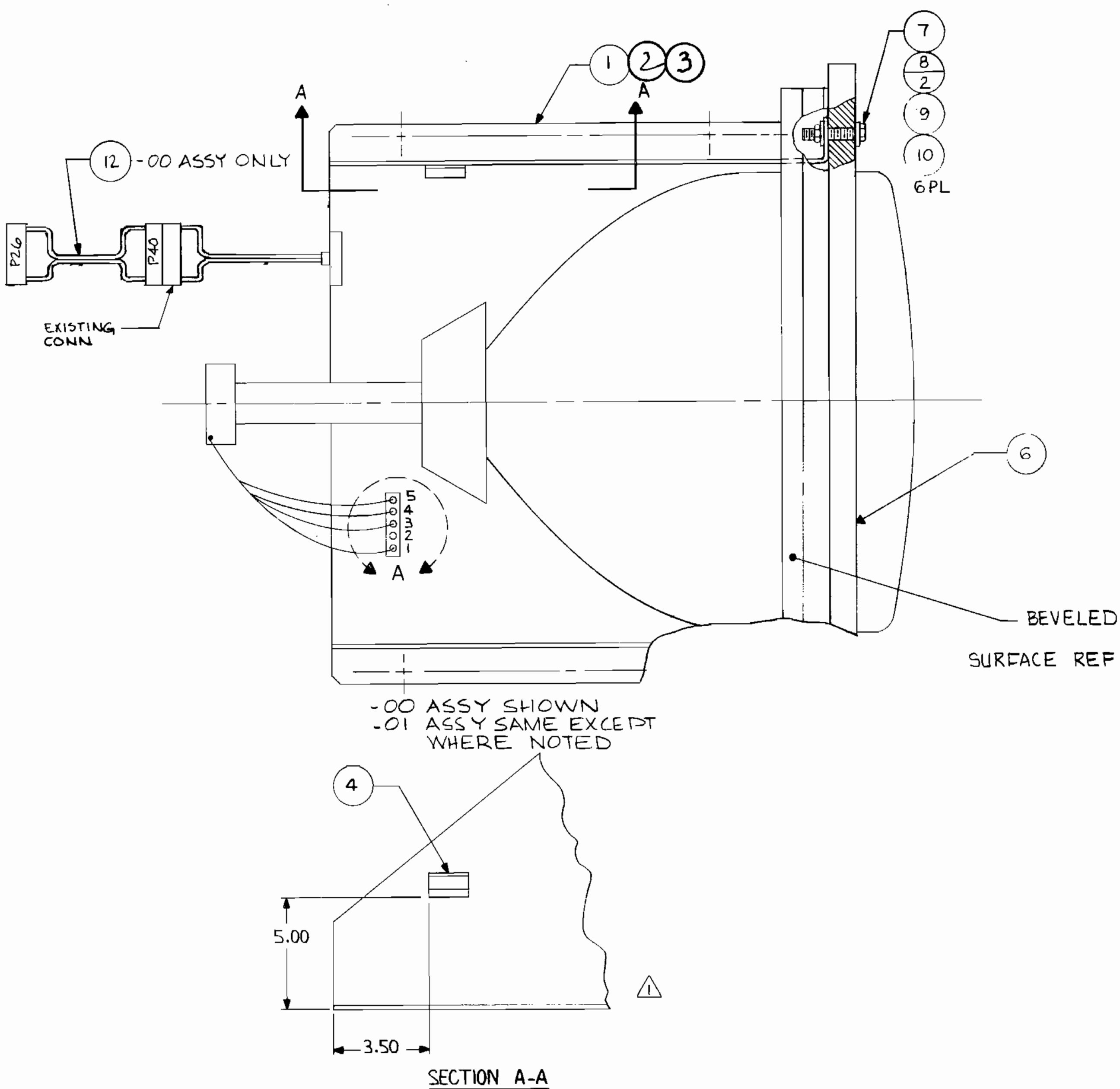
10
4.
9

DETAIL A


XFMR
1
2
3
4
RED
RED / BLK
RED
VIO
GRY
VIO
BRN
BRN / BLK
BRN
ORN
ORN / WHT
ORN
WHT / BLK
WHT
BLK
ITEM 9
2 PL
BLK 3.00 76
BLK 3.00 76
P25
4
10
9
8
5
6
7
3
2
1
P13
1
2
3
5
4
6
CONN VIEWED FROM WIRING END
P16
1
2
P11
1
2

MONITOR COLOR 19" VERTICAL ASSEMBLY DRAWING NUMBER 800-0140-01

ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION
1	200-0019-00	1	Color Monitor 19" Vertical
2	200-0022-00	1	Color Monitor 19" Vertical
3	200-0091-00	1	Color Monitor 19" Vertical
4	280-0004-00	1	Clip Wire Hold Down
5			
6	252-0089-00	1	Mounting Board Monitor Vertical
7	282-0017-20	6	Blt 1/4-20 X 1.25 Lg Hex Hd Mach Thd.
8	283-0060-34	12	Washer 1/4 Fl., Stl., .281 ID X 1.25 O.D.
9			
10	283-0070-05	6	Nut 1/4-20 Hex, Slflkg Mach Thd.


1
2
3
A
A
7
8
2
9
10
6PL
12
-00 ASSY ONLY
P26
P40
EXISTING CONN
5
4
3
2
1
A
6
BEVELED SURFACE REF
-00 ASSY SHOWN
-01 ASSY SAME EXCEPT WHERE NOTED
4
5.00
3.50
SECTION A-A

OUTSIDE OF THE PCB ASSY

Part No.	Description	Ref. Des.
200-0667	Picture tube 19"	
200-0068	Deflection yoke	
113-0009	PC magnet	
560-0096	Flyback trans.	
	HVR	
	UNF resistor 220 Ohm, 25W K	R05
	C capacitor 150pf, AC1.5KV	C04
482-0198	Si. transistor, 2SD870	X01
482-0143	Si. transistor, 2SC1106A	X02
	Screw #8 3/8	
	Screw 1/4 x 3/4 pix tube mtg (4)	
	Pyramidal lock washer (4)	
	Nut retainer, pix tube mtg (4)	
	Clip--PCB support	
	Standoff	
	Wire terminal (gnd strap)	
	Terminal lug (gnd)	
	Groundstrap assy	
	Grounding spring	
	Wire hook (gnd strap)	
	Purity shield holddown clamp	
	Support brkt RH	
	Support brkt LH	

Part No.	Description	Ref. Des.
	Chassis base	
	Yoke wedge (3)	
	PURITY SHIELD ASSY	
180-0022	Degaussing coil	D911,D912
481-0225	Rectifier 1 amp 600 V (2)	
	Pin terminal (2)	
	Pin terminal housing	
	Purity shield (2 pcs)	
	Purity shield (2 pcs)	
	Capacitor 100nf 10% 400V	C911
	Resistor, wirewound 33 Ohm, 4W	R921
	Fire retardent term strip 4 lug	
	CRT SOCKET PCB ASSY	
	V R 200	R105
	V R 200	R106
	V R 5K	R113
	V R 5K	R114
	V R 5K	R115
	OM R 10K Ohm 2W J	R116
	OM R 10K Ohm 2W J	R117
	OM R 10K Ohm 2W J	R118
	Comp R 3.3K Ohm 1/2W K	R119
	Comp R 3.3K Ohm 1/2W K	R120
	Comp R 3.3K Ohm 1/2W K	R121

MONITOR 19" VERTICAL - ELECTROHOME 607-907 DRAWING NUMBER 200-0019

Part No.	Description	Ref. Des.
Capacitors		
	E Cap 10uf 250V A	C107
	C Cap 1000pf DC1400V P	C108
Coils		
180-0023	Peaking coil	L101
Semiconductors		
482-0290	Si transistor, 2SC1514VC	X101
482-0290	Si transistor, 2SC1514VC	X102
482-0290	Si transistor, 2SC1514VC	X103
Miscellaneous		
213-0022	CRT socket	
	MAIN PCB ASSY	
Resistors		
	V R 200 Ohm	R406
	V R 200 Ohm	R408
	CMF R 6.8 Ohm 1W J	R410
	OM R 3.3K Ohm 1W J	R414
	OM R 2.7K Ohm 1W J	R415
	OM R 12K Ohm 2W J	R421
	V R 10K Ohm	R422
	F R 68 Ohm 2W K	FR401
	CMF R 11.8K Ohm 1/4W +1%	R503
	V R 5K Ohm	R504
	OM R 10K Ohm 2W J	R509
	OM R 8.2K Ohm 2W J	R512

Part No.	Description	Ref. Des
	OM R 820 Ohm 2W J	R514
	CMF R 8.2 Ohm 1W J	R515
	CMF R 4.7 Ohm 1W J	R522
	OM R 68 Ohm 2W J	R523
	OM R 390 Ohm 1W J	R528
	ZN R 470 Ohm	R534
	ZN R	VR501
	CMF R 39 Ohm 1/2W + 1%	R703
	CMF R 7.68K Ohm 1/4W + 1%	R704
	Posistor	R901
	UNF R 2 Ohm 7W K	R902
	CMF R 4.7 Ohm 3W J	R903
	OM R 10K Ohm 2W J	R904
	OM R 18K Ohm 1W J	R905
	CMF R 47 Ohm 1/2W + 1%	Q908
	V R 2K Ohm	R909
	CMF R 2.74K Ohm 1/4W + 1%	R910
	F R 220 Ohm 1/2W K	FR901
Capacitors		
	BPE Cap 3.3uf 50V A	C301
	Tan cap 2.2uf 16V K	C402
	E cap 4.7uf 6.3V A	C407
	E cap 100uf 160V A	C411
	E cap 3.3uf 160V A	C412

Part No.	Description	Ref. Des.
	PP cap 5600uf 50V J	C508
	PP cap 2000pf DC1500V J	C512
	PP cap 2000pf DC1500V J	C513
	PP cap 2000pf DC1500V J	C514
	PP cap 0.53uf DC1200V J	C515
	BPE cap 3.3uf 50V A	C520
	E cap 1uf 160V A	C523
	M cap 0.1uf 200V K	C524
	PP cap 2000pf DC1500V J	C531
	PP cap 1500pf DC1500V J	C532
	E cap	C904
	E cap 10uf 250V A	C905
Coils		
180-0024	Linarity coil	L502
181-0031	Width coil	L503
180-0025	Heater choke	L504
Transformers		
560-0061	Hor drive transf	T501
560-0097	Side pin transf	T503
Semiconductors		
316-0807	IC HA11244	IC501
482-0177	Si transistor, 2SC1685(R)	X101
482-0111	Si transistor, 2SA673(C)	X102
482-0177	Si transistor, 2SC1685(R)	X103

Part No.	Description	Ref. Des.
482-0111	Si transistor, 2SA673(C)	X104
482-0177	Si transistor, 2SC1685(R)	X105
482-0111	Si transistor, 2SA673(C)	X106
482-0177	Si transistor, 2SC1685(R)	X301
482-0177	Si transistor, 2SC1685(R)	X302
482-0111	Si transistor, 2SA673(C)	X303
482-0177	Si transistor, 2SC1685(R)	X304
482-0177	Si transistor, 2SC1685(R)	X305
482-0196	Si transistor, 2SD478	X401
482-0196	Si transistor, 2SD478	X402
482-0291	Si transistor, 2SC2610BK	X501
482-0257	Si transistor, 2SC2688 (KLM)	X901
482-0258	Si transistor, 2SC1890A (EF)	X902
481-0226	Si diode, W06A	D101
481-0226	Si diode, W06A	D102
481-0226	Si diode, W06A	D103
481-0149	Si diode, 1SZ473H	D301
481-0149	Si diode, 1SZ473H	D401
481-0227	Zener diode, RD10F(C)	D402
481-0171	Si diode, HF-1	D503
481-0228	Si diode, V09E	D504
481-0229	Zener diode, RD11E(B)	D505
481-0226	Si diode, W06A	D506
481-0230	Si diode, 1SS81	D507

Part No.	Description	Ref. Des.
481-0149	Si diode, 1SZ473H	D508
481-0231	Zener diode, RD20EV2	D701
481-0160	Si diode, 1S1887A	D901
481-0160	Si diode, 1S1887A	D902
481-0160	Si diode, 1S1887A	D903
481-0160	Si diode, 1S1887A	D904
481-0198	Zener diode, RD6.8EV3	D905
Miscellaneous		
	Fuse 1.25A	F901
	US fuse 3A	F902

P.C. BOARD LAYOUT

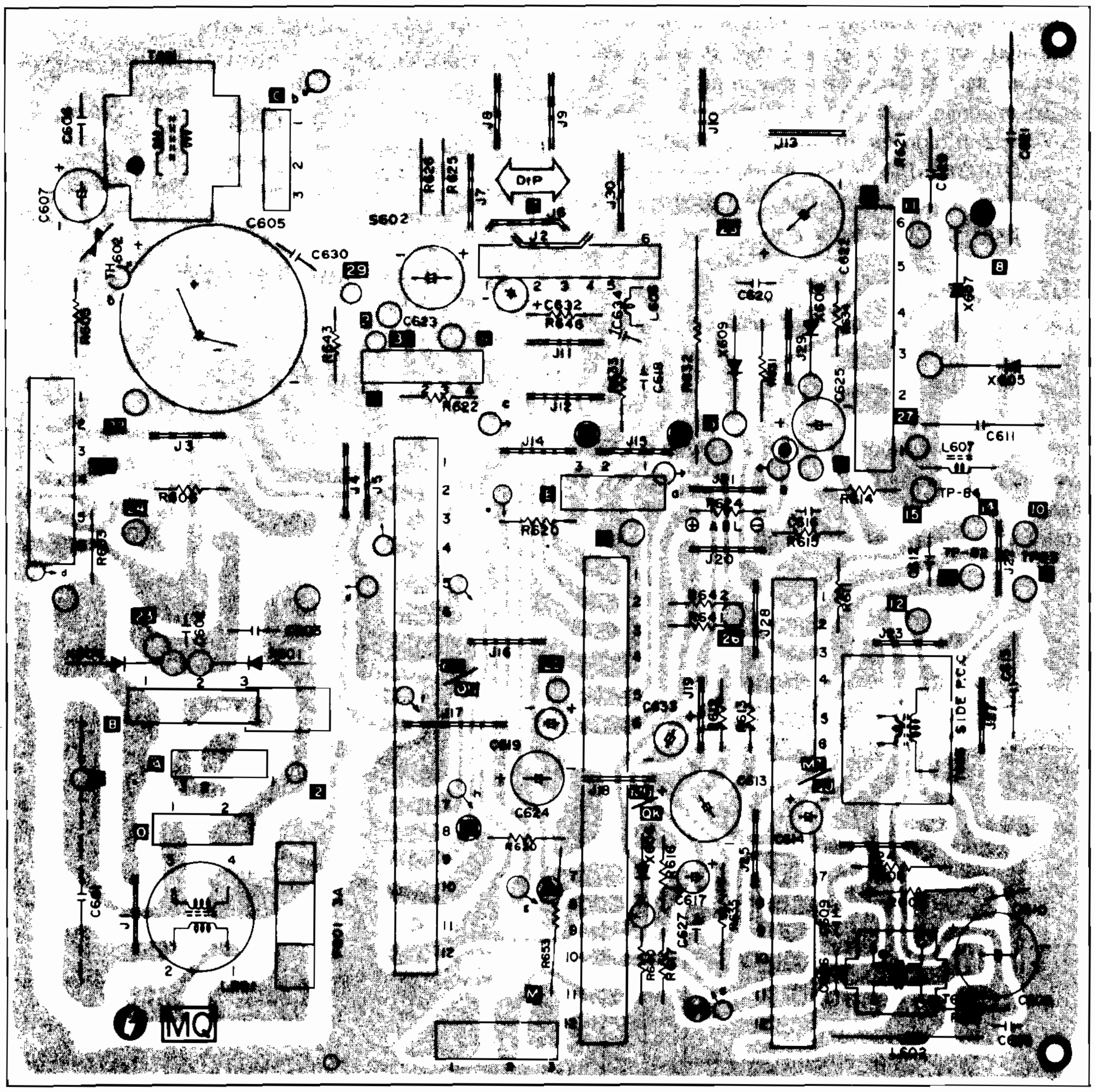


FIGURE 12. MAIN P.C. BOARD

P.C. BOARD LAYOUT

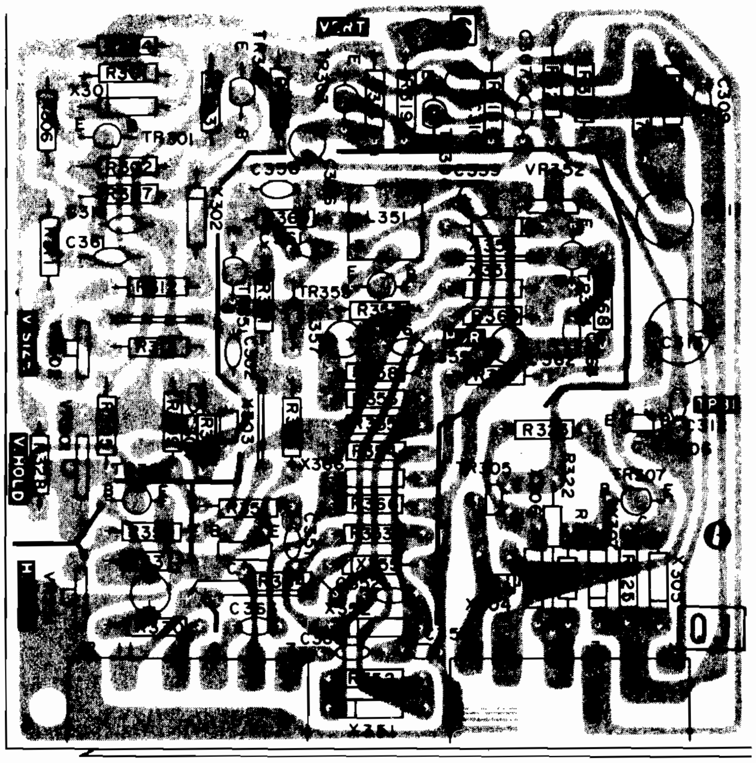


FIGURE 15. HORIZ/VERT P.C. BOARD

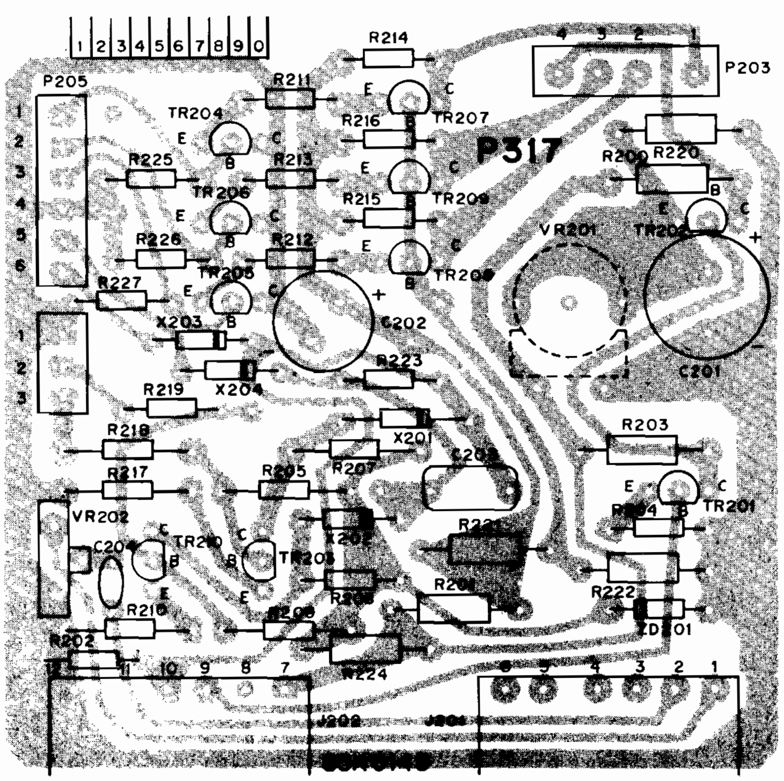


FIGURE 16. INTERFACE BOARD (P317 AND P318)

P.C. BOARD LAYOUT

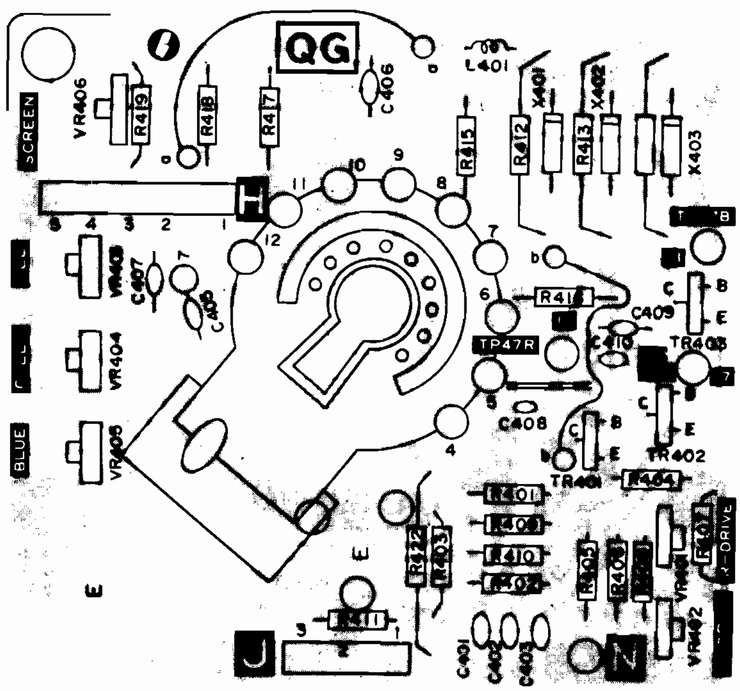


FIGURE 13. NECK P.C. BOARD

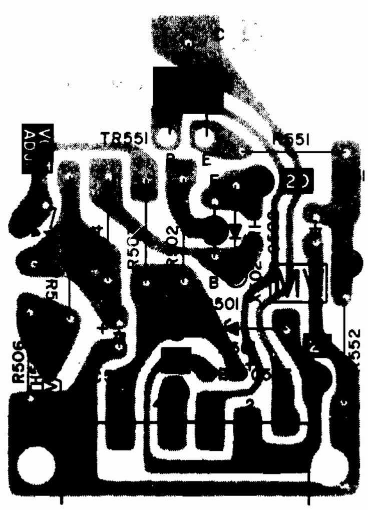


FIGURE 14. POWER P.C. BOARD

MONITOR 19" VERTICAL - WELLS GARDNER 19K 4675 DRAWING NUMBER 200-0022

MAIN BOARD

Part No.	Description	Ref. Des.
Resistors		
	33k Ohm, ±10%, 1/2W carbon	R603
	470 Ohm, ±10%, 5W WW	R606
	2.7k Ohm, ±10%, 5W WW	R607
	1.2k Ohm, ±5%, 1W MO	R608
	22 Ohm, ±5%, 1/8W carbon	R610
	1k Ohm, ±5%, 1/2W carbon	R611
	470 Ohm, ±10%, 1/2W carbon	R612
	1.2k Ohm, ±5%, 1W MO	R613
	680k Ohm, ±5%, 1/2W comp	R614
	270k Ohm, ±5%, 1/2W comp	R615
	2.7 Ohm, ±5%, 1/8W carbon	R616
	68k Ohm, ±5%, 1/8W carbon	R617
	1k Ohm, ±5%, 1/2W carbon	R624
	2.2 Ohm, ±10%, 5W MO	R631
	120 Ohm, ±5%, 5W carbon	R632
	2.2 Ohm, ±5%, 1/8W carbon	R634
	6.8 Ohm, ±5%, 1/2W carbon	R635
	33k Ohm, ±5%, 1/8W carbon	R641
	15k Ohm, ±5%, 1/8W carbon	R642
	15 Ohm, ±10%, 2W carbon	R647
	1.8k Ohm, ±10%, 1/2W carbon	R649
	270 Ohm, 10%, 1/2W carbon	R650

MONITOR 19" VERTICAL - WELLS GARDNER 19K 4675 DRAWING NUMBER 200-0022

Part No.	Description	Ref. Des.
	240 Ohm, ±10%, 2W carbon	R651
	6/8k Ohm, ±10%, 1/2W carbon	
Semiconductors		
482-0262	Transistor, 2SC1893	TR601
481-0214	Rectifier, (SI)RM-2AV 600V	X601
481-0214	Rectifier, (SI)RM-2AV 600V	X602
481-0214	Rectifier, (SI) RM-2AV 600V	X603
481-0214	Rectifier, (SI) RM-2AV 600V	X604
481-0215	Diode (HS) SB-2CGL 1200V min	X605
481-0149	Diode (SI) IS2473-772	X606
481-0216	Diode (HS) RC-2V 0.8 US	X607
481-0217	Diode (HS) RU-2V	X608
481-0217	Diode (HS) RU-2V	X609
481-0218	Rectifier, power (SI) 500V PIV	X610
481-0218	Rectifier, power (SI) 500V PIV	X611
481-0218	Rectifier, power (S1) 500V PIV	X612
Transformers & Coils		
180-0020	Coil, line filter R-3	L601
180-0014	Coil, filter, 10uh	L602
560-0094	Transformer, hor drive	T602
560-0095	Transformer, side PC	T603
180-0015	Width coil	L702

MONITOR 19" VERTICAL - WELLS GARDNER 19K 4675 DRAWING NUMBER 200-0022

Part No.	Description	Ref. Des.
Capacitors		
	0.1 uf, 125V, ±20% MM	C601
	2200 pf, Z5F, ±10% ceramic	C602
	2200 pf, 125V ceramic	C603
	2200 pf, Z5F, ±10% ceramic	C604
	330 uf, 200V electrolytic	C605
	47 uf, 160V electrolytic	C608
	.0033 uf, 500V ±10% ceramic	C609
	.01 uf, 500V, ±10% ceramic	C610
	100 pf, 3KV, ±10% ceramic	C611
	.022 uf, 200v, ±10% PP	C612
	220 uf, 25V electrolytic	C613
	33 uf, 25V electrolytic	C614
	0.39 uf, 200V, ±10% PP	C615
	47 pf, 500V ceramic	C616
	1 uf, 50v electrolytic	C617
	1 uf, 50V electrolytic	C619
	0.1 uf, 100V, ±10% mylar	C620
	0.1 uf, 1.5KV, ±20% paper	C621
	1000 uf, 35V electrolytic	C622
	470 uf, 25V electrolytic	C623
	100 uf, 25V electrolytic	C624
	10 uf, 160V electrolytic	C625
	100 pf, 500V, ±10% ceramic	C626

Part No.	Description	Ref. Des.
	39 pf, 500V, ±10% ceramic	C627
	2200 pf, 500V, ±10% ceramic	C628
	6900 pf, 1.5KV, ±5% PP	C629
	2.2 uf, 50V electrolytic	C633
	3 pf, 2kV, ±0.5 pf ceramic	C637
	.056 uf, 10% mylar	C638
Miscellaneous		
	Fuse (UL/CSA) 3A-125	F601
	Socket, 6 pin	J607
	Plug, 3 pin (GT)	P602
	Plug, 4 pin (NM)	P604
	Plug, 6 pin (GT)	P607
	Plug, 3 pin (NM)	P608
	Plug, 2 pin (NM)	P611
	Thermistor	TH601
	Plug, 6 pin	P201
	Plug, 6 pin	P202
	VERT/HOR BOARD	
Resistors		
	820 Ohm, ±5%, 1/8W carbon	R301
	12k Ohm, ±5%, 1/8W carbon	R302
	15k Ohm, ±5%, 1/8W carbon	R303
	10k Ohm, ±5%, 1/8W carbon	R304
	330k Ohm, ±5%, 1/8W carbon	R305

Part No.	Description	Ref. Des.
	1k Ohm, ±5%, 1/8W carbon	R306
	1.5k Ohm, ±5%, 1/8W carbon	R307
	2.2k Ohm, ±5%, 1/8W carbon	R309
	470k Ohm, ±5%, 1/8W	R310
	56k Ohm, ±5%, 1/8W carbon	R311
	100k Ohm, ±5%, 1/8W carbon	R312
	10k Ohm, ±5%, 1/8W carbon	R313
	47k Ohm, 5%, 1/8W carbon	R314
	820 Ohm, ±5%, 1/8W carbon	R315
	120 Ohm, ±5%, 1/8W carbon	R316
	2.2 Ohm, ±5%, 1/2W carbon	R317
	33k Ohm, ±5%, 1/4W carbon	R318
	10 Ohm, ±5%, 1/8W carbon	R319
	15k Ohm, ±5%, 1/8W carbon	R320
	560 Ohm, ±5%, 1/2 W carbon	R321
	22 Ohm, ±5%, 2W MO	R322
	1.5 Ohm, ±5%, 1/8W carbon	R323
	27k Ohm, ±5%, 1/8W carbon	R324
	47 Ohm, ±5%, 1/8W carbon	R325
	820 Ohm, ±5%, 1/8W carbon	R328
	10k Ohm, ±5%, 1/8W carbon	R330
	220k Ohm, ±5%, 1/8W carbon	R331
	2.2k Ohm, ±5%, 1/8W carbon	R351
	15k Ohm, ±5%, 1/8W carbon	R352

Part No.	Description	Ref. Des.
	18k Ohm, ±5%, 1/8W carbon	R353
	3.9k Ohm, ±5%, 1/8W carbon	R354
	12k Ohm, ±5%, 1/8W carbon	R355
	470 Ohm, ±5%, 1/8W carbon	R356
	2.2k Ohm, ±5%, 1/8W carbon	R357
	1.2k Ohm, ±5%, 1/8Wcarbon	R358
	68k Ohm, ±5%, 1/8W carbon	R359
	27 Ohm, ±5%, 1/4W carbon	R360
	1.2k Ohm, ±5%, 1/8W carbon	R361
	1.2k Ohm, ±5%, 1/8W carbon	R363
	47k Ohm, ±5%, 1W MO	R364
	56k Ohm, ±5%, 1/2W carbon	R365
	3.3k Ohm, ±5%, 1/8W carbon	R366
	2.2k Ohm, ±5%, 1/2W carbon	R367
	3.9k Ohm, ±5%, 1/8W carbon	R368
	3.3k Ohm, ±5%, 1/4W carbon	R369
	1k Ohm, ±5%, 1/4W carbon	R370
	2.7k Ohm, ±5%, 1/4W carbon	R371
	2.2k Ohm, ±5%, 1/4W carbon	R383
	8.2k Ohm, ±5%, 1/4W carbon	R384
	Varistor, 250k Ohm, vert hold	VR301
	Varistor, 20k Ohm, vert size	VR302
	Varistor, 50k Ohm, hor hold	VR351

Part No.	Description	Ref. Des.
Capacitors		
	0.15 uf, 50V ±10% mylar	C301
	0.022 uf, 50V, ±10% mylar	C302
	0.1 uf, 50V, ±10% mylar	C304
	2.2 uf, 50V, electrolytic	C306
	0.15 uf, 50V, ±10% mylar	C307
	0.1 uf, 50V, ±10% mylar	C309
	22 uf, 16V electrolytic	C310
	1000 uf, 35V electrolytic	C311
	0.0082 uf, 50V, ±10% ceramic	C312
	47 uf, 50V electrolytic	C313
	10 uf, 25V electrolytic	C315
	3300 uf, 50V, ±10% mylar	C316
	100 pf 50V, ±10% ceramic	C317
	1500 pf, 50V, ±10% ceramic	C351
	1000 pf, 50V, ±10% ceramic	C352
	0.022 uf, 50V, ±10% mylar	C353
	0.1 uf, 50V, ±10% mylar	C355
	4.7 uf, 25V electrolytic	C356
	0.015 uf, 200V, ±10% PP	C357
	0.018 uf, 200V, ±10% PP	C358
	4.7 uf, 160V electrolytic	C359
	0.01 uf, 50V, ±10% ceramic	C360
	0.015 uf, 50V, ±10% mylar	C361

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Part No.	Description	Ref. Des.
	10 uf, 50V electrolytic	C362
	0.01 uf, 630V, ±10% PP	C363
	0.01 uf, 50V, ±10% ceramic	C364
Semiconductors		
482-0282	Transistor, 2SA826Q	TR301
482-0261	Transistor, 2SC1740Q	TR302
482-0283	Transistor, 2SA1740Q	TR303
482-0261	Transistor, 2SC1740Q	TR304
452-0284	Transistor, 2SA490YLBGLI	TR305
482-0285	Transistor, 2SC1625YLBGLI	TR306
482-0261	Transistor, 2SC1740R	TR307
482-0261	Transistor, 2SC1740Q	TR308
482-0117	Transistor, 2SA854Q	TR351
482-0286	Transistor, 2SC1722BKS	TR352
482-0261	Transistor, 2SC1740Q	TR353
482-0282	Transistor, 2SA826Q	TR354
481-0149	Diode (SI) IS 2473-T72	X301
481-0149	Diode (SI) IS2473-T72	X302
481-0099	Diode (GE), IN60TVGL	X303
481-0219	Diode (SI) ISS81	X304
481-0219	Diode (SI) ISS81	X305
481-0219	Diode (SI) 1SS81	X306
481-0220	Diode (SI) MA26W	X307
481-0149	Diode (SI) IS2473	X308

Part No.	Description	Ref. Des.
481-0149	Diode (SI) IS2473-T72	X351
481-0149	Diode (SI) IS2473-T72	X352
4810149	Diode (SI) IS2473-T72	X53
481-0149	Diode (SI) IS2473-T72	X54
481-0221	Diode (Zener) RD10EBI	X355
481-0222	Diode (HS) RU-1 0.3 US	X366
Miscellaneous		
204X9300-958	Socket, 6 pin	J301
204X9300-958	Socket, 6 pin	J302
204X9601-195	Plug, 6 pin	P301
204X9601-195	Plug, 6 pin	P302
201X0000-534	Thermistor	TH301
Transformers & Coils		
101-0030	Coil, horiz osc	L351

POWER BOARD

Resistors		
	180 Ohm, ±10%, 15W WW	R501
	100 Ohm, ±5%, 1/8W carbon	R502
	1k Ohm, ±5%, 1/8W carbon	R503
	560 Ohm, ±5%, 1/8W carbon	R504
	39k Ohm, ±5%, 1W MO	R505
	6.8k Ohm, ±5%, 1/8W carbon	R506
	Varistor volt adj	VR501

Part No.	Description	Ref. Des.
Capacitors		
	10uf, 160V electrolytic	C501
	1500 pf, 50V, ±10% ceramic	C502
	22 uf, 16V electrolytic	
Semiconductors		
482-0261	Transistor, 2SC1740Q	TR501
482-0288	Transistor, 2SC1454	TR502
481-0135	Diode (SI) zener EQB01-06V	X501
481-0149	Diode (SI) IS2473-T72	X502
Miscellaneous		
	Socket, 6 pin	J501
	Plug, 6 pin	P501
	Thermistor	TH501
	NECK BOARD	
Resistors		
	1.8k Ohm, ±5%, 1/8W carbon	R401
	1.8k Ohm, ±5%, 1/8W carbon	R402
	1.8k Ohm, ±5%, 1/8W carbon	R403
	150 Ohm, ±5%, 1/8W carbon	R404
	220 Ohm, ±5%, 1/8W carbon	R405
	150 Ohm, ±5%, 1/8W carbon	R406
	390 Ohm, ±5%, 1/4W carbon	R407
	390 Ohm, ±5%, 1/4W carbon	R408
	4.7k Ohm, ±5%, 1/8W carbon	R409

Part No.	Description	Ref. Des.
	4.7k Ohm, ±5%, 1/8W carbon	R410
	4.7k Ohm, ±5%, 1/8W carbon	R411
	12k Ohm, ±5%, 2.0W metal oxide	R412
	12k Ohm, ±5%, 2.0W metal oxide	R413
	12k Ohm, ±5%, 2.0W metal oxide	R414
	2.7k Ohm, ±10% 1/2W comp	R415
	2.7k Ohm, ±10%, 1/2W comp	R416
	2.7k Ohm, ±10%, 1/2W comp	R417
	470k Ohm, ±10%, 1/2W comp	R418
	330k Ohm, ±10%, 1/2W comp	R419
	1.0 Ohm, ±10%, 2W metal oxide	R422
	270 Ohm, ±5%, 1/4W carbon	R423
	500 Ohm varistor R drive	VR401
	500 Ohm varistor B drive	VR402
	5k Ohm varistor R cutoff	VR403
	5k Ohm varistor G cutoff	VR404
	5k Ohm varistor B cutoff	VR405
	1M Ohm varistor screen	VR406
Capacitors		
	1000 pf, 50V, 10% ceramic	C401
	1000 pf, 50V, 10% ceramic	C402
	1000 pf, 50V, 10% ceramic	C403
	1500 pf, 2kV ±10% ceramic	C404
	100 pf, 12kv, ±10% ceramic	C405

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Part No.	Description	Ref. Des.
	.01 uf, 500V, ±10% ceramic	C406
	1500 pf, 2kV, ±10% ceramic	C407
	68 pf, 50V, ±10% ceramic	C408
	68 pf, 50V, ±10% ceramic	C409
	68 pf, 50V, ±10% ceramic	C410
Semiconductors		
482-0155	Transistor, 2SC1514 (R output)	TR401
482-0155	Transistor, 2SC1514 (G output)	TR402
482-0155	Transistor, 2SC1514 (B output)	TR403
481-0223	Diode, IS2367 (protector)	X404
481-0223	Diode, IS2367 (protector)	X405
481-0223	Diode, IS2367 (protector)	X406
Miscellaneous		
	Socket, 5 pin	J401
	Socket, 3 pin	J402
	Plug, 5 pin	P401
	Plug, 3 pin	P402
800-3253 High Voltage Assembly (T701)		
	6.8 Ohm, ±10% 15W WW resistor	R701
220-0223	Focus control	VR702
	Diode (SI HV)) Part of T701	X701
	Diode (SI HV)) Part of T701	X702
	Diode (SI HV)) Part of T701	X703

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Part No.	Description	Ref. Des.
Final Assembly Parts		
200-0020	19VJTP22 pix tube	
800-3254	Assy purity shld/degaussing	
800-3255	Lateral/purity assembly	
200-0066	Yoke, deflection	
213-0021	CRT socket	
800-3253	HV unit (T701)	
	Plug, line cord (K4625, K4675, K4677)	
	Plug, line cord (K4626, K4676)	
180-0021	Degaussing coil (L701)	
	INTERFACE FACE BOARD (P317)	
Resistors		
	91 Ohm ±5%, 12/W carbon	R201
	22k Ohm, ±10%, 1/4W carbon	R202
	1k Ohm, ±5%, 1/2W carbon	R203
	100 Ohm, ±5%, 1/4W carbon	R204
	100k Ohm, ±5%, 1/4W carbon	R205
	330 Ohm, ±10%, 1/2W carbon	R206
	2.2k Ohm, ±5%, 1/4W carbon	R207
	2.2k Ohm, ±5%, 1/4W carbon	R208
	100k Ohm, ±5%, 1/4W carbon	R209
	100 Ohm, ±5%, 1/4W carbon	R210
	220 Ohm, ±5%, 1/4W carbon	R211
	220 Ohm, ±5%, 1/4W carbon	R212

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Part No.	Description	Ref. Des.
	220 Ohm, ±5%, 1/4W carbon	R213
	150 Ohm, ±5%, 1/4W carbon	R214
	150 Ohm, ±5%, 1/4W carbon	R215
	150 Ohm, ±5%, 1/4W carbon	R216
	100 Ohm, ±5%, 1/4W carbon	R217
	1k Ohm, ±5%, 1/2W carbon	R218
	1k Ohm, ±5%, 1/2W carbon	R219
	680 Ohm, ±5%, 1/2W carbon	R220
	270 Ohm, ±5%, 1/2W carbon	R221
	270 Ohm, ±5%, 1/2W carbon	R222
	100k Ohm, 5%, 1/4W carbon	R223
	1k Ohm, 5%, 1/2W carbon	R224
	8.2k Ohm, 5%, 1/4W carbon	R225
	8.2k Ohm, 5%, 1/4W carbon	R226
	8.2k Ohm, 5%, 1/4W carbon	R227
	390 Ohm, 5%, 1/2W carbon	R228
	1.5k Ohm black level control	VR201
	10k Ohm horizontal centering	VR202
Capacitors		
	1000 uf, 16V electrolytic	C201
	470 uf, 16V lytic	C202
	.022 uf, 10% 100V	C203
	680 pf, 10%, Z5F	C204
	.01 uf, 10%, 100V	C205

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Part No.	Description	Ref. Des.
Semiconductors		
482-0030	Transistor (NPN) 2N3904	TR201
482-0030	Transistor (NPN) 2N3904	TR202
482-0030	Transistor (NPN) 2N3904	TR203
482-0289	Transistor (PNP) MPS-A70	TR204
482-0289	Transistor (PNP) MPS-A70	TR205
482-0289	Transistor (PNP) MPS-A70	TR206
482-0030	Transistor (NPN) 2N3904	TR207
482-0030	Transistor (NPN) 2N3904	TR208
482-0030	Transistor (NPN) 2N3904	TR209
482-0030	Transistor (NPN) 2N3904	TR210
481-0224	Diode silicon FDH-444	X201
481-0224	Diode silicon FDH-444	X202
481-0224	Diode silicon FDH-444	X203
481-0224	Diode silicon FDH-444	X204
481-0014	Diode, zener 3.9V, 5%, 0.5W IN5228B	ZD201
Miscellaneous		
	Socket, 6 pin	J201
	Socket, 6 pin	J202
	Plug, 4 pin	P203
	Plug, 3 pin	P204
	Plug, 6 pin	P205

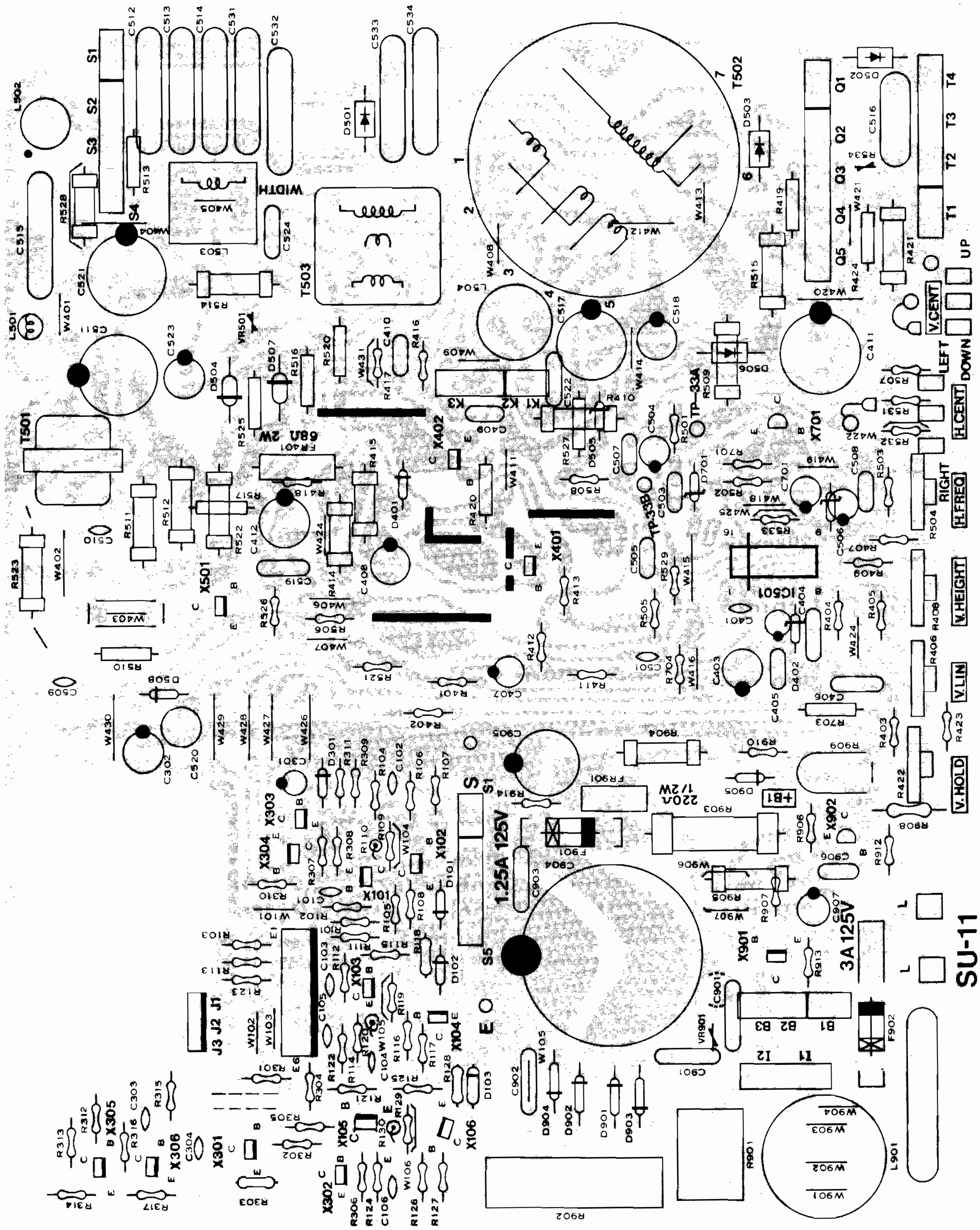
Part No.	Description	Ref. Des.
Resistors		
	91 Ohm, ±5%, 1/2W carbon	R201
	22k Ohm, ±10%, 1/4W carbon	R202
	1k Ohm, ±5%, 1/2W carbon	R203
	100 Ohm, ±5%, 1/4W carbon	R204
	100k Ohm, ±5%, 1/4W carbon	R205
	330 Ohm, ±10%, 1/2W carbon	R206
	2.2k Ohm, ±5%, 1/4W carbon	R207
	2.2k Ohm, ±5%, 1/4W carbon	R208
	100k Ohm, ±5%, 1/4W carbon	R209
	100 Ohm, ±5%, 1/4W carbon	R210
	200 Ohm, ±5%, 1/4W carbon	R211
	200 Ohm, ±5%, 1/4W carbon	R212
	200 Ohm, ±5%, 1/4W carbon	R213
	200 Ohm, ±5%, 1/4W carbon	R214
	200 Ohm, ±5%, 1/4W carbon	R215
	200 Ohm, ±5%, 1/4W carbon	R216
	100 Ohm, ±5%, 1/4W carbon	R217
	1k Ohm, ±5%, 1/2W carbon	R218
	1k Ohm, ±5%, 1/2W carbon	R219
	1k Ohm, 5%, 1/2W carbon	R220
	200 Ohm, 5%, 1/2W carbon	R221
	200 Ohm, 5%, 1/2W carbon	R222
	100k Ohm, 5%, 1/4W carbon	R223

Part No.	Description	Ref. Des.
	680k Ohm, 5%, 1/2W carbon	R224
	8.2k Ohm, 5%, 1/4W carbon	R225
	8.2k Ohm, 5%, 1/4W carbon	R226
	8.2k Ohm, 5%, 1/4W carbon	R227
	390 Ohm, 5%, 12W carbon	R228
	1.5k Ohm black level control	VR201
	10k Ohm horizontal centering	VR202
Capacitors		
	1000 uf, 16V electrolytic	C201
	470 uf, 16V lytic	C202
	.022 uf, 10% 100V	C203
	680 pf, 10%, Z5F	C204
	.01 uf, 10%, 100V	C205
Semiconductors		
482-0030	Transistor (NPN) 2N3904	TR201
482-0030	Transistor (NPN) 2N3904	TR202
482-0030	Transistor (NPN) 2N3904	TR203
482-0289	Transistor (PNP) MPS-A70	TR204
482-0289	Transistor (PNP) MPS-A70	TR205
482-0289	Transistor (PNP) MPS-A70	TR206
482-0030	Transistor (NPN) 2N3904	TR207
482-0030	Transistor (NPN) 2N3904	TR208
	482-0030 Transistor (NPN) 2N3904	TR209
482-0030	Transistor (NPN) 2N3904	TR210

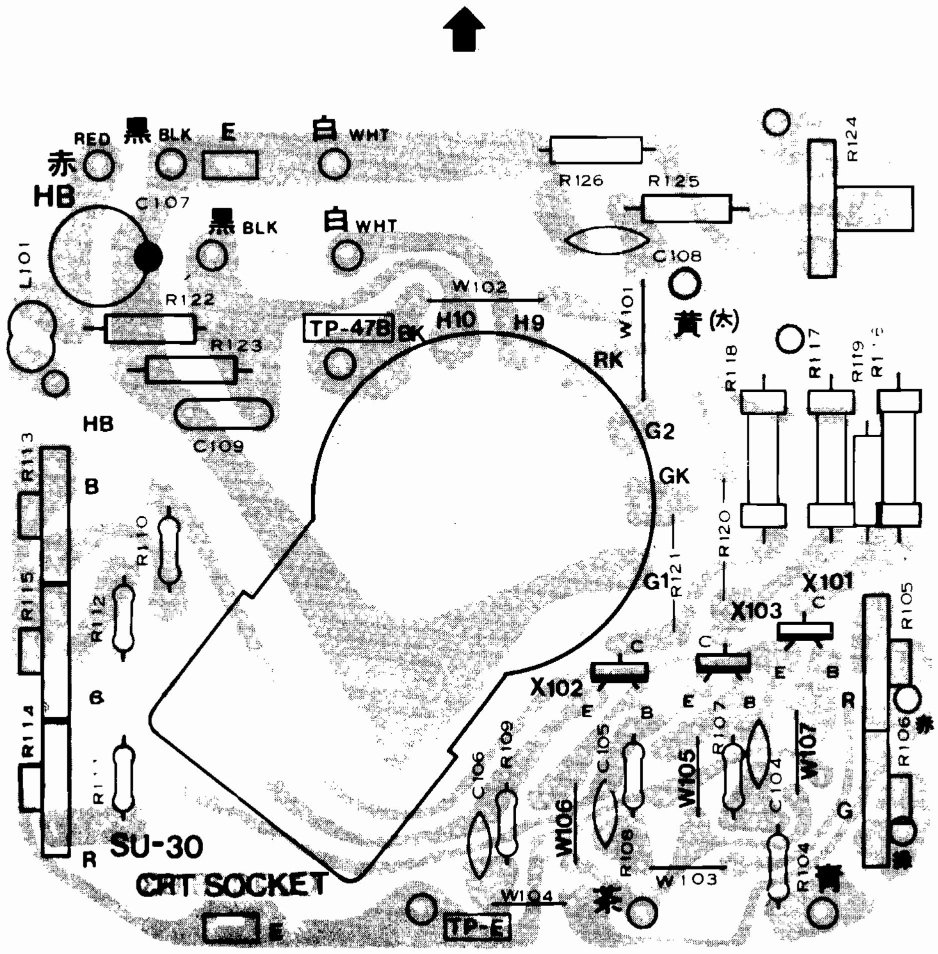
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Part No.	Description	Ref. Des.
481-0224	Diode silicon FDH-444	X201
481-0224	Diode silicon FDH-444	X202
481-0224	Diode silicon FDH-444	X203
481-0224	Diode silicon FDH-444	Xw04
481-0014	Diode, zener 3.9V, 5%, 0.5W IN5228B	ZD201
Miscellaneous		
	Socket, 6 pin	J201
	Socket, 6 pin	J202
	Plug, 4 pin	P203
	Plug, 3 pin	P204
	Plug, 6 pin	P205

MAIN P.C.B. COMPONENT LAYOUT



C.R.T. P.C.B. COMPONENT LAYOUT



MAIN BOARD

ITEM NO.	PART NO.	DESCRIPTION	REF. DESG.
		CAPACITORS	
1		1000 uF, 16V, Electrolytic	C201
2		330 pF, 500V, Ceramic	C202
3		220 pF, 500V, Ceramic	C203
4		220 pF, 500V, Ceramic	C204
5		470 uF, 16V, Electrolytic	C205
6		0.1 uF, 125V Mylar	C206
7		.022 uF, 100V Mylar	C207
8		330 uF, 50V Electrolytic	C301
9		0.033 uF, 50V Mylar	C302
10		3.3 uF, 50V Electrolytic	C303
11		0.068 pF, 50V Mylar	C304
12		2.2 uF, 16V Tantal	C306
13		0.033 uF, 50V Mylar	C307
14		3.3 uF, 50V Electrolytic	C308
15		0.068 uF, 100V PP	C309
16		10 uF, 100V Electrolytic	C310
17		10 uF, 160V Electrolytic	C311
18		1000 pF, 500V Ceramic	C312
19		47 uF, 160V Electrolytic	C313
20		0.033 uF, 200V PP	C314
21		1 uF, 50V Electrolytic	C315
22		1 uF, 50V Electrolytic	C351
23		47 uF, 25V Electrolytic	C352

MAIN BOARD

ITEM NO.	PART NO.	DESCRIPTION	REF. DESG.
		CAPACITORS	
24		0.0082 pF, 50V Mylar-PP	C353
25		47 uF, 25V Electrolytic	C354
26		0.0068 pF, 50V Mylar	C355
27		0.01 uF, 500V Ceramic	C356
28		100 pF, 500V Ceramic	C359
29		0.0033 pF, 500V Ceramic	C360
30		0.01 uF, 500V Ceramic	C361
31		0.01 uF, 50V Ceramic	C362
32		8700 pF, 1.5 KV PP	C363
33		0.33 uF, 200V PP	C365
34	150-0074	22 uF, 25V Electrolytic	C366
35		6 uF, 500V Ceramic	C367
36		0.01 uF, 50V Ceramic	C368
37		0.1 uF, 100V PP	C372
38		470 uF, 500V Ceramic	C380
39		0.1 uF, 125V Mylar	C501
40		1500 pF, 500V Ceramic	C502
41		2200 pF, 125V Ceramic	C503
42		2200 pF, 125V Ceramic	C504
43		560 uF, 200V Electrolytic	C505
44		22 uF, 160V Electrolytic	C506
45		47 uF, 160V Electrolytic	C507
46		1000 uF, 25V Electrolytic	C701

MAIN BOARD

ITEM NO.	PART NO.	DESCRIPTION	REF. DESG.
		CAPACITORS	
47		10 uF, 100V Electrolytic	C702
48		1000 pF, 500V Ceramic	C703

MONITOR 19" VERTICAL - WELLS GARDNER DRAWING NUMBER 200-0091

MAIN BOARD

ITEM NO.	PART NO.	DESCRIPTION	REF. DESG.
		RESISTORS	
1		1K Ohm, 5%, 1/4W Carbon	R201
2		30 Ohm, 5%, 1/4W Carbon	R202
3		100 Ohm, 5%, 1/4W Carbon	R203
4		100 Ohm, 5%, 1/2W Carbon	R204
5		270 Ohm, 5%, 1/2W Carbon	R205
6		390 Ohm, 5%, 1/4W Carbon	R206
7		200 Ohm, 5%, 1/4W Carbon	R207
8		390 Ohm, 5%, 1/4W Carbon	R208
9		200 Ohm, 5%, 1/4W Carbon	R209
10		390 Ohm, 5%, 1/4W Carbon	R210
11		200 Ohm, 5%, 1/4W Carbon	R211
12		1K Ohm, 5%, 1/4W Carbon	R214
13		100K Ohm, 5%, 1/4W Carbon	R215
14		1K Ohm, 5%, 1/4W Carbon	R216
15		100 Ohm, 5%, 1/4W Carbon	R217
16		1K Ohm, 5%, 1/4W Carbon	R218
17		100K Ohm, 5%, 1/4W Carbon	R219
18		1K Ohm, 5%, 1/4W Carbon	R220
19		100 Ohm, 5%, 1/4W Carbon	R221
20		3.3 Ohm, 5%, 1/4W Carbon	R222
21		10 Ohm, 5%, 1/4W Carbon	R224
22		10 Ohm, 5%, 1/4W Carbon	R225
23		10 Ohm, 5%, 1/4W Carbon	R226
24		47K Ohm, 5%, 1/4W Carbon	R227

MAIN BOARD

ITEM NO.	PART NO.	DESCRIPTION	REF. DESG.
		RESISTORS	
25		1K Ohm, 5%, 1/4W Carbon	R228
26		270 Ohm, 5%, 1/2W Carbon	R229
27		8.2K Ohm, 5%, 1/2W Comp.	R230
28		8.2K Ohm, 5%, 1/2W Comp.	R231
29		8.2K Ohm, 5%, 1/2W Comp.	R232
30		180 Ohm, 5%, 1/4W Carbon	R233
31		82 Ohm, 5%, 1/4W Carbon	R234
32		82 Ohm, 5%, 1/4W Carbon	R235
33		82 Ohm, 5%, 1/4W Carbon	R236
34		270 Ohm, 5%, 1/4W Carbon	R301
35		8.2K Ohm, 5%, 1/4W Carbon	R302
36		8.2K Ohm, 5%, 1/4W Carbon	R303
37		2.2K Ohm, 5%, 1/4W Carbon	R304
38		6.8K Ohm, 5%, 1/4W Carbon	R305
39		7.5K Ohm, 2%, 1/4W Carbon	R306
40		5.6K Ohm, 5%, 1/4W Carbon	R307
41		22K Ohm, 5%, 1/4W Carbon	R309
42		39K Ohm, 5%, 1/4W Carbon	R310
43		3.3K Ohm, 5%, 1/4W Carbon	R311
44		4.7K Ohm, 5%, 1/4W Carbon	R312
45		1K Ohm, 5%, 5W Carbon	R313
46		220 Ohm, 5%, 1/4W Carbon	R314
47		10 Ohm, 5%, 1/4W Carbon	R315

MAIN BOARD

ITEM NO.	PART NO.	DESCRIPTION	REF. DESG.
		RESISTORS	
48		3.3K Ohm, 5%, 1/4W Carbon	R316
49		12 Ohm, 5%, 1/2W Carbon	R317
50		390 Ohm, 5%, 1/4W Carbon	R318
51		1K Ohm, 5%, 1/4W Carbon	R319
52		33K Ohm, 5%, 1/4W Carbon	R320
53		270K OhM, 5%, 1/2W Carbon	R321
54		10K Ohm, 5%, 1/4W Carbon	R322
55		10K Ohm, 5%, 1/4W Carbon	R351
56		3.9K Ohm, 5%, 1/4W Carbon	R352
57		68K Ohm, 5%, 1/4W Carbon	R353
58		3.3K Ohm, 5%, 1/4W Carbon	R354
59		6.8K Ohm, 5%, 3W Metal Oxide	R355
60		56K Ohm, 5%, 1/2W Carbon	R358
61		470 Ohm, 5%, 1/4W Carbon	R360
62		10K Ohm, 5%, 1/4W Carbon	R361
63		1.8K Ohm, 5%, 1W Metal Oxide	R362
64		3.9K Ohm, 5%, 7W Metal Oxide	R363
65		22 Ohm, 5%, 1/4W Carbon	R364
66		33K Ohm, 5%, 1/4W Carbon	R365
67		10K Ohm, 5%, 1/4W Carbon	R367
68		330K Ohm, 5%, 1/2W Comp.	R368
69		680K Ohm, 5%, 1/2W Comp.	R369
70		33K Ohm, 5%, 1/4W Carbon	R370

MAIN BOARD

RESISTORS

ITEM NO.	PART NO.	DESCRIPTION	REF. DESG.
71		1K Ohm, 5%, 1W Metal Oxide	R371
72		12K Ohm, 5%, 1W Metal Oxide	R372
73		6.8K Ohm, 5%, 1/2W Carbon	R375
74		270 Ohm, 5%, 2W Metal Oxide	R376
75		150 Ohm, 5%, 1/4W Carbon	R377
76		10K Ohm, 5%, 1/4W Carbon	R378
77		10K Ohm, 5%, 1/4W Carbon	R379
78		8.2K Ohm, 5%, 1/4W Carbon	R380
79		2.2K Ohm, 5%, 1W Metal Oxide	R381
80		150 Ohm, 5%, 1W Metal Oxide	R383
81		10K Ohm, 5%, 1/4W Carbon	R502
82		150 Ohm, 5%, 15W Metal Oxide	R503
83		47 Ohm, 5%, 1W Metal Oxide	R504
84		2.2K Ohm, 5%, 1/4W Carbon	R505
85		15 Ohm, 5%, 2W Metal Oxide	R506
86		330K Ohm, 5%, 1/2W Comp.	R507
87		3.3 Ohm, 5%, 10W WW	R601
88		2.2 Ohm, 5%, 2W Metal Oxide	R701
89		2.2 Ohm, 5%, 1/2W Carbon	R702
90		2K Ohm-B Semi-Fixed	VR201
91		5K Ohm-B Semi-Fixed	VR301
92		500 Ohm-B Semi-Fixed	VR303
93		2K Ohm-B Semi-Fixed	VR351
94		2K Ohm-B Semi-Fixed	VR352

MAIN BOARD

ITEM NO.	PART NO.	DESCRIPTION	REF. DESG.
		SEMICONDUCTORS	
1	481-0175	Diode, IS2076-27	D203
2	481-0175	Diode, IS2076-27	D204
3	481-0175	Diode, IS2076-27	D205
4	481-0175	Diode, IS2076-27	D206
5	481-0175	Diode, IS2076-27	D207
6	481-0175	Diode, IS2076-27	D208
7	481-0175	Diode, IS2076-27	D209
8	481-0219	Diode, ISS81	D301
9	481-0175	Diode, IS2076-27	D302
10	481-0175	Diode, IS2076-27	D303
11	418-0244	Diode, RH-IV	D304
12	481-0244	Diode, RH-IV	D305
13	481-0175	Diode, IS2076-27	D306
14	481-0245	Diode, RM-1AV	D501
15	481-0245	Diode, RM-1AV	D502
16	481-0245	Diode, RM-1AV	D503
17	481-0245	Diode, RM-1AV	D504
18	481-0245	Diode, RM-1AV	D505
19	481-0245	Diode, RM-1AV	D506
20	481-0217	Diode, RU-2V	D701
21	481-0244	Diode, RH-1V	D702
22	482-0160	Transistor (NPN) 2SC1815GR	Q201
23	482-0160	Transistor (NPN) 2SC1815GR	Q202

MAIN BOARD

ITEM NO.	PART NO.	DESCRIPTION	REF. DESG.
		SEMICONDUCTORS	
24	482-0301	Transistor (PNP) 2SA562-Y-TM	Q203
25	482-0301	Transistor (PNP) 2SA562-Y-TM	Q204
26	482-0301	Transistor (PNP) 2SA562-Y-TM	Q205
27	482-0160	Transistor (NPN) 2SC1815GR	Q206
28	482-0160	Transistor (NPN) 2SC1815GR	Q207
29	482-0160	Transistor (NPN) 2SC1815GR	Q208
30	482-0302	Transistor (NPN) 2SC1851GR	Q209
31	482-0302	Transistor (NPN) 2SC1851GR	Q210
32	482-0302	Transistor (NPN) 2SC1851GR	Q301
33	482-0161	Transistor (NPN) 2SC2073LBGL2	Q302
34	482-0161	Transistor (NPN) 2SC2073LBGL2	Q303
35	482-0303	Transistor (NPN) 2SC2482BK	Q351
36	482-0202	Transistor (NPN) 2SD898B	Q352
37	313-0132	IC HA11423	IC301
38	313-0129	IC STR381	IC501

MAIN BOARD

ITEM NO.	PART NO.	DESCRIPTION	REF. DESG.
		TRANSFORMERS & COILS	
1	181-0035	Coil, (RF Choke)	L351
2	181-0036	Coil, Horiz., Size	L352
3	181-0037	Coil, Adg.	L701
4	560-0121	Transformer, Hor. Drive	T351
5	560-0122	HV-Unit M-11	T352

MAIN BOARD

ITEM NO.	PART NO.	DESCRIPTION	REF. DESG.
		MISCELLANEOUS	
1		Fuse, 4 Amp. 125V	F501
2		Recap W Wire 3P-M-BG	J402
3		Plug, PWB 3P-J	P201
4		Plug, PWB 6P-Q	P202
5		Plug, PWB 4P-B	P401
6		Plug, PWB 2P-B	P501
7		Plug, PWB 4P-C	P601
8	478-0012	Thermistor	TH501

MAIN BOARD

ITEM NO.	PART NO.	DESCRIPTION	REF. DESG.
		FINAL ASSEMBLY	
1	200-0093	19VLTP22 Pix Tube	
2	834-5030	Lateral/Purity Assembly	
3	200-0092	Yoke Deflection	
4	834-5031	CRT Socket	
5	181-0038	Automatic Degaussing Coil Unit	

NECK BOARD

ITEM NO.	PART NO.	DESCRIPTION	REF. DESG.
		RESISTORS	
1		220 Ohm, 5%, 1/4W Carbon	R401
2		390 Ohm, 5%, 1/4W Carbon	R402
3		820 Ohm, 5%, 1/4W Carbon	R403
4		220 Ohm, 5%, 1/4W Carbon	R404
5		390 Ohm, 5%, 1/4W Carbon	R405
6		820 Ohm, 5%, 1/4W Carbon	R406
7		470 Ohm, 5%, 1/4W Carbon	R407
8		270 Ohm, 5%, 1/4W Carbon	R408
9		820 OhM, 5%, 1/4W Carbon	R409
10		15K Ohm, 5%, 2W M.O. Forming	R410
11		15K Ohm, 5%, 2W M.O. Forming	R411
12		15K Ohm, 5%, 2W M.O. Forming	R412
13		2.7K Ohm, 5%, 1/2W Comp.	R413
14		2.7K Ohm, 5%, 1/2W Comp.	R414
15		2.7K Ohm, 5%, 1/2W Comp.	R415
16		2.2 Ohm, 5%, 2W Metal Oxide	R416
17		2.7K Ohm, 5%, 1/4W Carbon	R419
18		2.7K Ohm, 5%, 1/4W Carbon	R420
19		2.7K Ohm, 5%, 1/4W Carbon	R421
20		500 Ohm, -B Semi-Fixed	VR401
21		500 Ohm, -B Semi-Fixed	VR402
22		5K Ohm, -B Semi-Fixed	VR403
23		5K Ohm, -B Semi-Fixed	VR404
24		5K Ohm, -B Semi-Fixed	VR405

NECK BOARD

ITEM NO.	PART NO.	DESCRIPTION	REF. DESG.
		CAPACITORS	
1		1200 pF, 500V Ceramic	C401
2		1000 pF, 500V Ceramic	C402
3		1000 pF, 500V Ceramic	C403
4		1500 pF, 1.5KV Ceramic	C404
5		0.01 uF, 500V Ceramic	C405

NECK BOARD

ITEM NO.	PART NO.	DESCRIPTION	REF. DESG.
		SEMICONDUCTORS	
1	482-0304	Transistor (NPN) 2SC2068LB	Q401
2	482-0304	Transistor (NPN) 2SC2068LB	Q402
3	482-0304	Transistor (NPN) 2SC2068LB	Q403

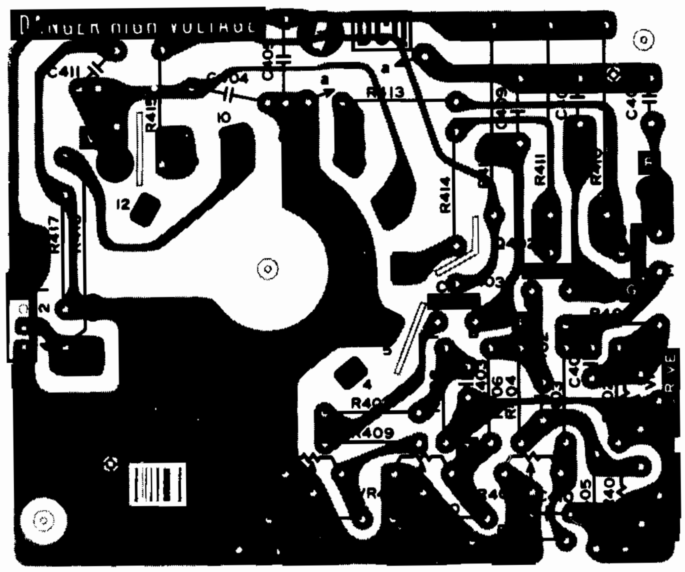
NECK BOARD

ITEM NO.	PART NO.	DESCRIPTION	REF. DESG.
		MISCELLANEOUS	
1		RECEP W Wire 4P-E	J401
2		Plug, PWB 3P-A	P402
3		Plug, Pin 1P-D	P403
4		Plug, PWB 4P-E	P701

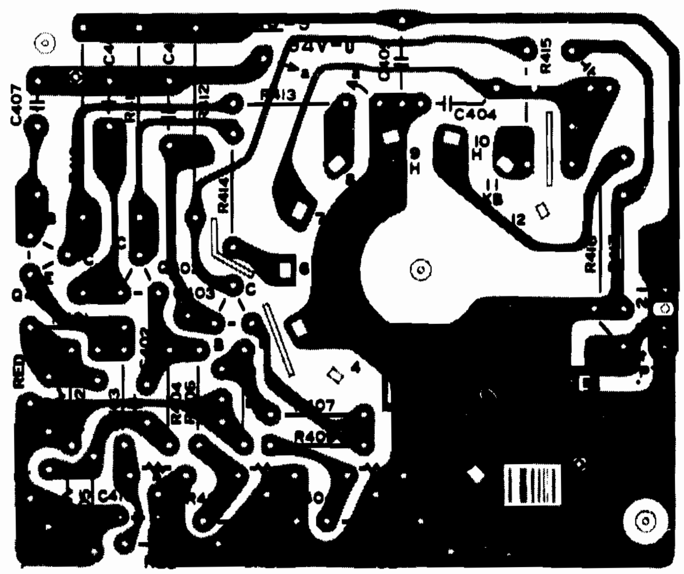
COLOR MONITOR ASSEMBLY — DRAWING NUMBER 800-0405-00

ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
1	200-0091	1	W/G Color 19 In Vertical Mt	
	200-0019	1	CRT Color 19 IN Vertical Mt	
	200-0022	1	W/G Color 19 IN Vertical Mt	
3	252-0175	1	Monitor Mounting Board	
4				
5	282-0017	6	Bolt 1/4-20 X 1.50 Lg Hex Hd	
6	283-0007	6	Nut 1/4-20 Hex, Slflkg, Mach Thd	
7	284-0027	12	Washer 1/4 Flat, Large OD, Steel .281 ID X 1.00 OD	
8				
9				
10	800-0159	1	Assy. Harness Monitor Power	

P.C. BOARD LAYOUT



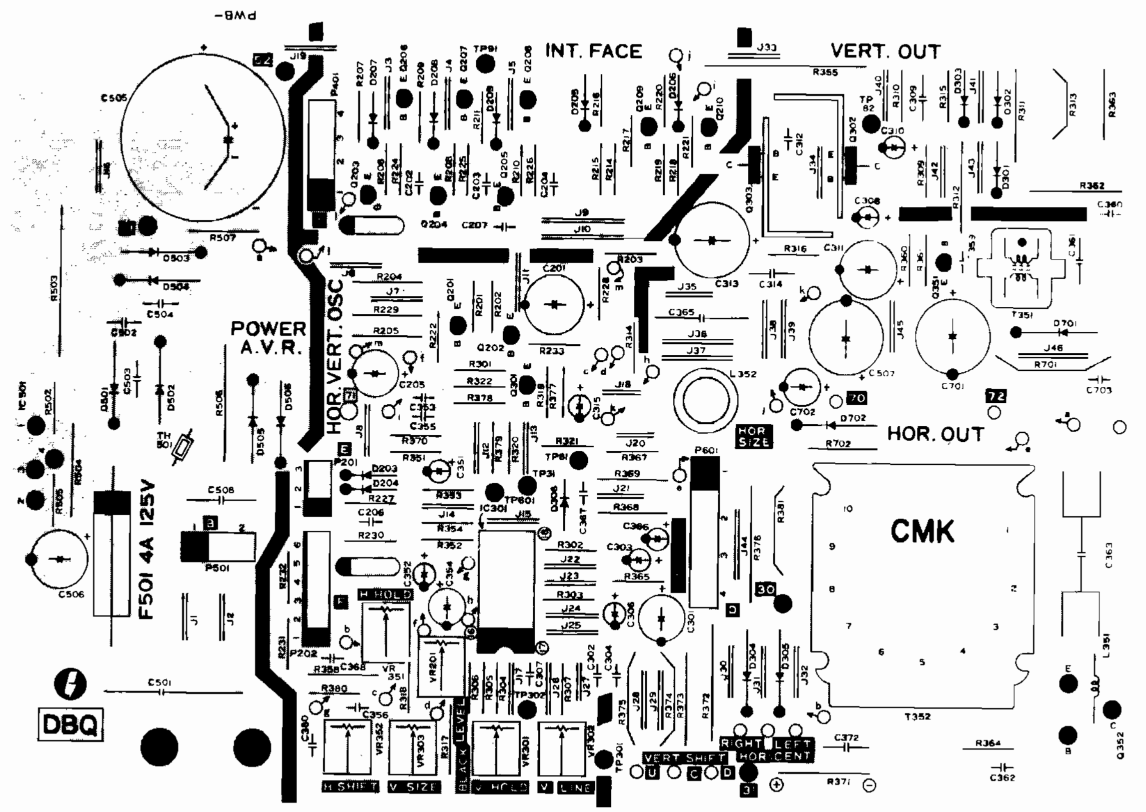
TOP VIEW



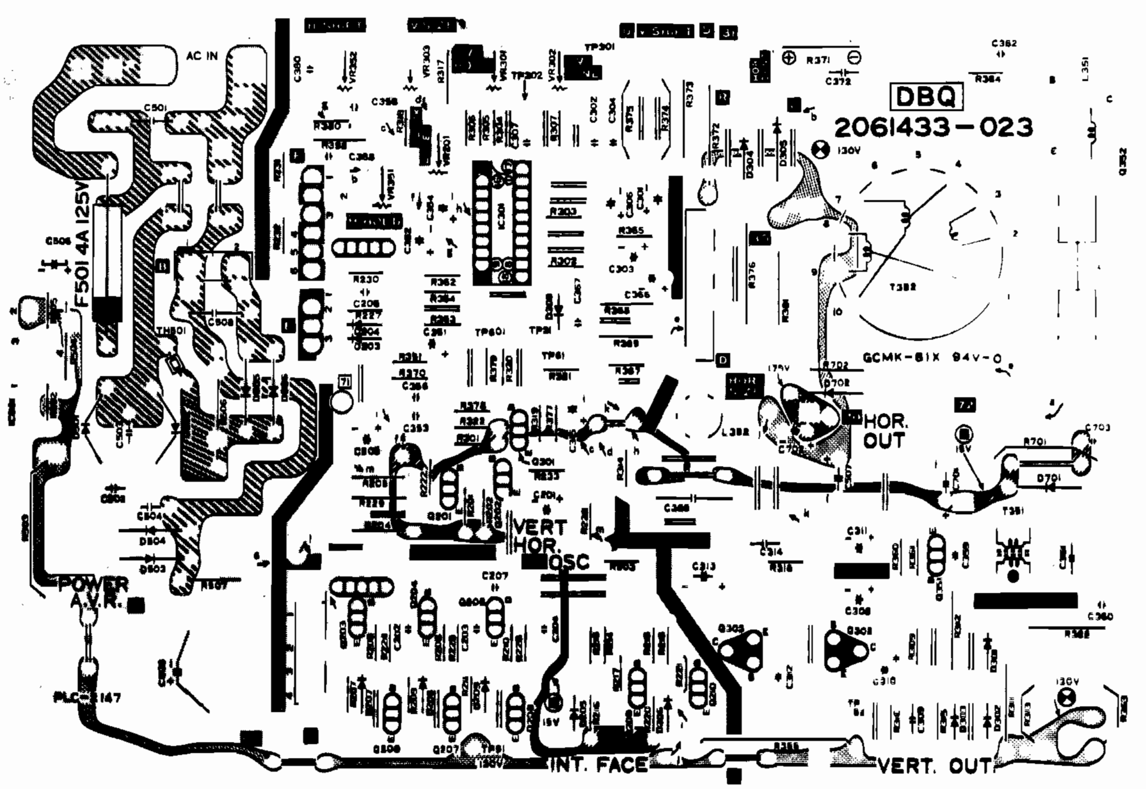
BOTTOM VIEW

FIGURE 12 NECK P.C. BOARD

P.C. BOARD LAYOUT



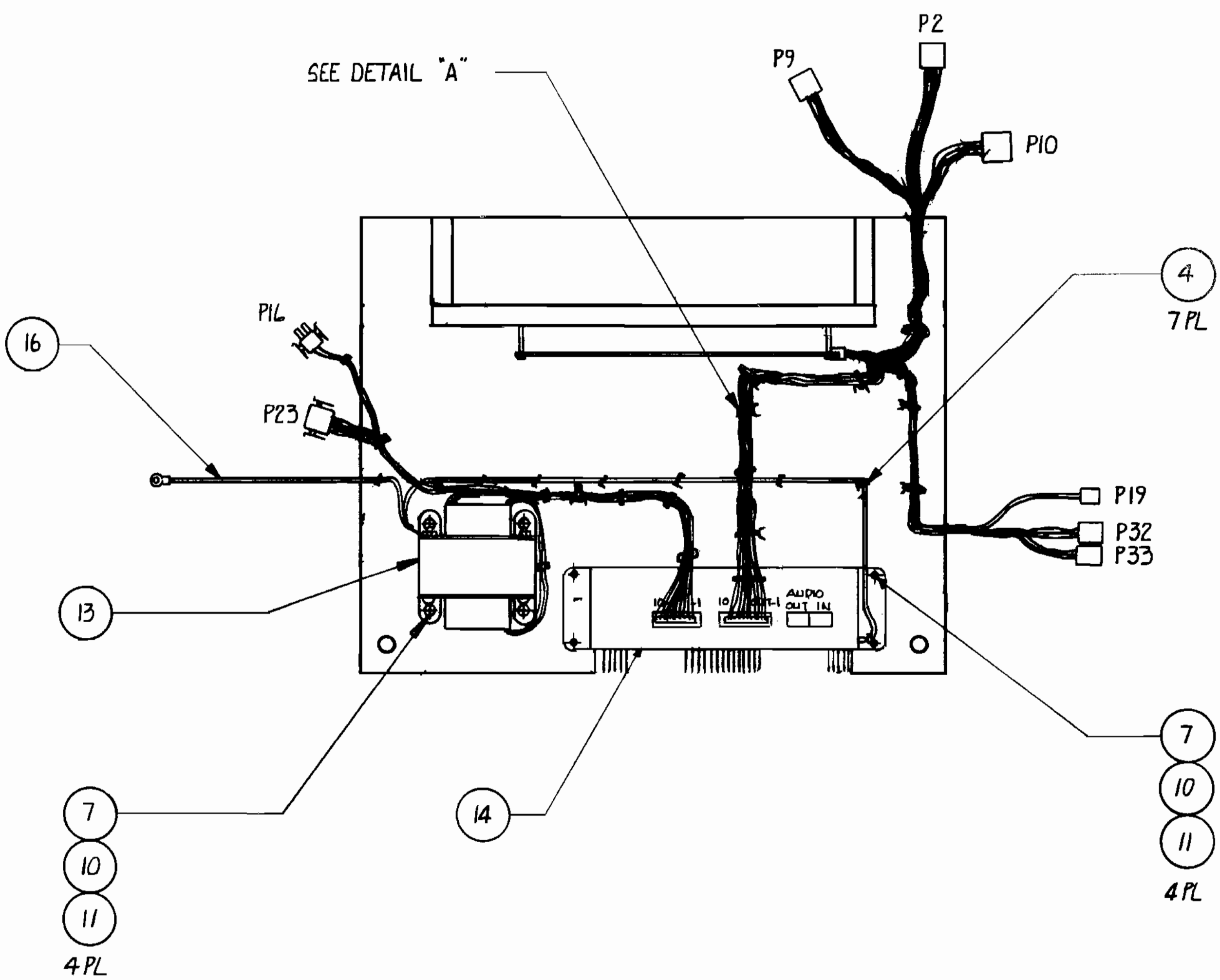
TOP VIEW



BOTTOM VIEW

COMPONENT SHELF ASSEMBLY DRAWING NUMBER 800-3286-00

ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
1	252-0208	1	Component Shelf	
2				
3	280-0005	9	Cable Tie	
4	280-0475	16	Staple	
5	280-0490	4	Spacer .140 ID x 250 OD x .375 Lg Nylon	
6	281-0042	4	SCR #6-18 x 1" PN HD Type A/AB	
7	281-0045	8	SCR #10-12 x 3/4 PN HD Type A/AB	
8				
9	284-0012	4	Washer, FL #6 Std. O.D.	
10	284-0016	8	Washer, FL #10 Std. O.D.	
11	284-0036	8	Washer, Lock Split #10	
12	284-0032	4	Washer, Lock Split #6	
13	800-0190	1	Assy. XMFR EM1	
14	800-0191-01	1	Assy, GM Pwr Supply G-80	
15	800-3281	1	Assy, Master Harness	
16	800-0409	1	Assy, Grnd Strap XMFR & Power Supply	
17				
18	834-5081	1	Assy, Game Electronics	


SEE DETAIL "A"
P2
P9
P10
P16
P23
16
4
7 PL
P19
P32
P33
13
AUDIO
OUT IN
7
10
11
4 PL
14
7
10
11
4 PL

GAME ELECTRONICS

There are six sets of electronics for PENGO. They all use the same schematics and parts list. The difference is in EPROM and CPU part numbers. Listed below are the EPROM and CPU part numbers for each board and on succeeding pages are the part numbers common to all boards.

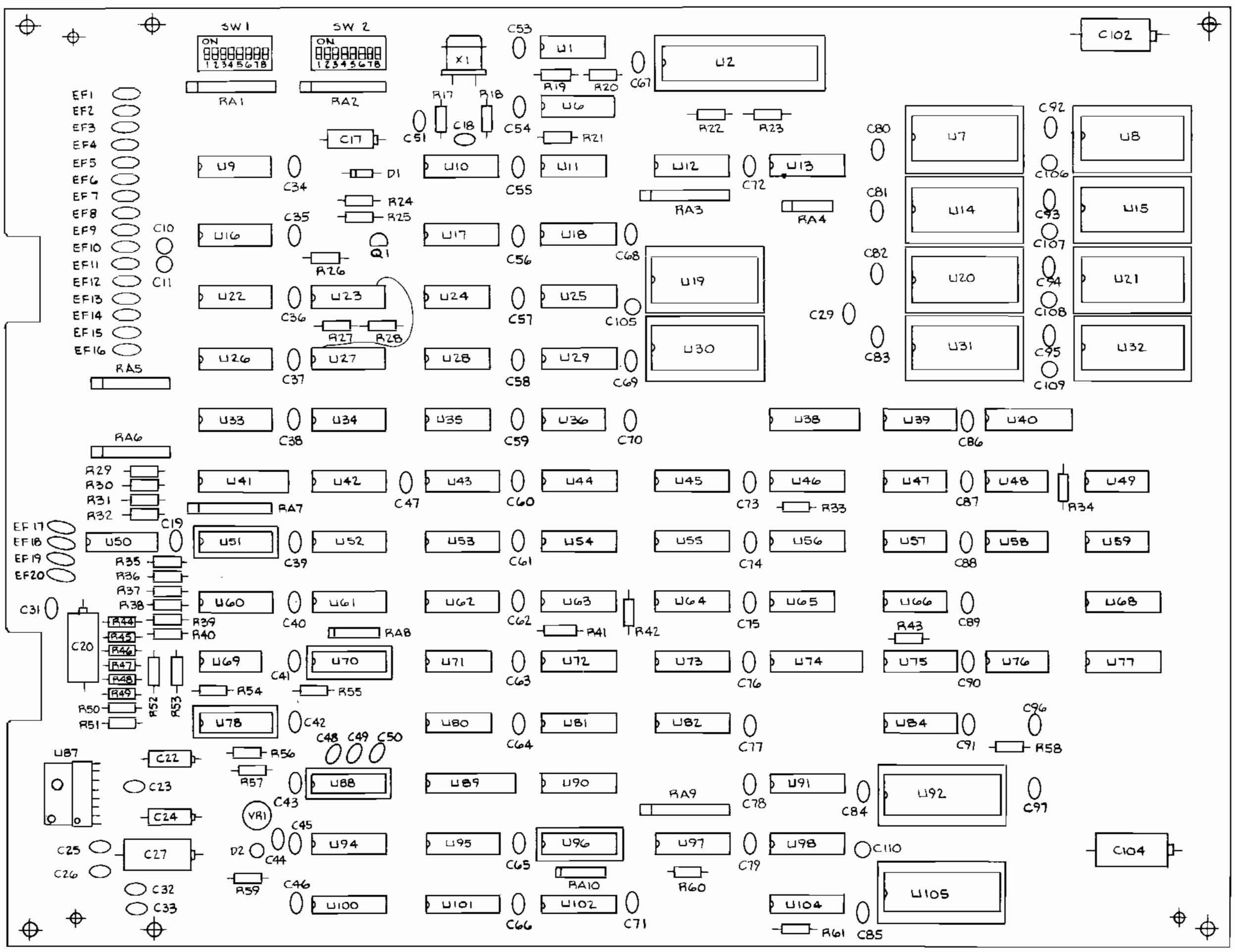
IC	BOARD NUMBER					
POSITION	834-0386-00	834-5081-00	834-5081-01	834-5092-00	834-5081-02	834-5092-01
U8	316-1689C	316-1738	316-1738A	316-5128	316-1738B	316-5128
U7	316-1690B	316-1739	316-1739A	316-5129	316-1739B	316-5129
U15	316-1691B	316-1740	316-1740A	316-5130	316-1740B	316-5130
U14	316-1692B	316-1741	316-1741A	316-5131	316-1741B	316-5131A
U21	316-1693B	316-1742	316-1742	316-5132	316-1742	316-5132
U20	316-1694B	316-1743	316-1743	316-5133	316-1743	316-5133
U32	316-5118B	316-1744	316-1744	316-5134	316-1744	316-5134
U31	316-5119C	316-1745	316-1745A	316-5135	316-1745B	316-5135A
U2	315-5010	315-5010	315-5010	315-0041	315-5010	315-0041

GAME ELECTRONICS ASSEMBLY DRAWING NUMBER 834-0386-00

ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
1	150-0031	4	Cap E 470MF 16V	C20, 27, 102, 104
2	150-0085	1	Cap E 10MF 16V T-T	C17
3	150-0185	2	Cap E 47MF 16V T-T	C22, 24
4				
5	151-0002	1	Cap Cer 100PF 50V	C18
6	151-0005	5	Cap Cer 680PF 50V	C44, C48-C50, 52
7	151-0040	1	Con .01MF 25V Cer	C19
8	151-0041	64	Con 0.1MF 25V Cer	C23, 25, 26, C32-C43, 47, 45, 46, 51, C53-C97, 67
9	151-0043	3	Con 220 PF 50V Cer	C21, 29, 31
10				
11	153-0045	8	Cap 4.7MF 16V	C10, 11, C105-C110
12				
13	171-0099	1	PCB, Pengo	
14	601-5001	17	EMI Filter, 2200PF	EF1-EF16, EF20
15	601-5002	3	EMI Filter, 270PF	EF17-EF19
16	213-0001	10	Skt 24 Pin Dual Inln	XU7, XU8, XU14, XU15, XU19-XU21, XU30-XU32
17	213-0002	2	Skt 18 Pin Dual Inln	XU88, XU96
18	213-0004	3	SKt 16 Pin Dual Inln	XU51, XU70, XU78
19	213-0005	1	Skt 40 Pin Dual Inln	XU2
20	213-0012	2	Skt 28 Pin Dual Inln	XU92, XU105
21				
22	220-0186	1	Vol Cont 2K oHm SM-Fxd	VR1
23				

ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
24	230-0023	1	Xtal 18.432	X1
25				
26				
27	313-0036	1	IC MB-3712 SF	U87
28	313-0086	1	IC TD 62003P	U33
29				
30	314-0018	2	IC 74LS00	U57, U80
31	314-0019	3	IC 74LS04	U28, U49, U58
32	314-0058	2	IC 74LS08	U35, U53
33	314-0059	2	IC 74LS10N	U59, U62
34	314-0060	2	IC 74LS20	U71, U95
35	314-0062	4	IC 74LS74	U24, U48, U65, U66
36	314-0066	1	IC 74LS27	U47
37	314-0068	1	IC 74LS32	U68
38	314-0070	3	IC 74LS86	U11, U69, U76
39	314-0072	3	IC 74LS174	U60, U77, U84
40	314-0076	4	IC 74LS157	U43, U75, U94, U104
41	314-0078	1	IC 74LS02	U36
42	314-0087	1	IC 74LS139	U17
43	314-0097	7	IC 74LS161	U23, U46, U56, U63, U64, U90, U97
44	314-0098	2	IC 74LS194	U91, U98
45	314-0099	2	IC 74LS245	U38, U40
46	314-0100	1	IC 74LS273	U41
47	314-0101	3	IC 74LS283	U61, U72, U73
48	314-0102	4	IC 74LS367	U12, U13, U29, U102

ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
49	314-0103	1	IC 74LS368	U6
50	314-0104	2	IC 74LS138	U10, U39
51	314-0105	4	IC 74LS253	U9, U16, U22, U26
52	314-0108	1	IC 74LS107	U1
53	314-0119	1	IC 74LS377	U89
54	314-0123	3	IC 74LS257	U25, U54, U55
55	314-0143	1	IC 74LS259	U27
56	314-0149	4	IC 7489	U42, U52, U81, U82
57	314-0177	1	IC 74LS375	U101
58	314-0203	2	IC 74LS158	U34, U100
59	314-0254	3	IC 74LS258	U18, U44, U45
60				
61	315-0045	1	IC CD4066	U50
62	315-0126	1	IC MB 8148-SS	U96
63	315-0127	1	IC AM25LS2519	U74
64	315-0194	2	IC TMM 2016P	U19, U30
65	315-0080	1	IC 6331	U78
66				
67	316-1640	1	IC 2764	U92
	316-1695	1	IC 2764	U105
68	316-1635	1	IC 6301-1	U51
	316-1636	1	IC 6301-1	U70
	316-1634	1	IC 6301-1	U88

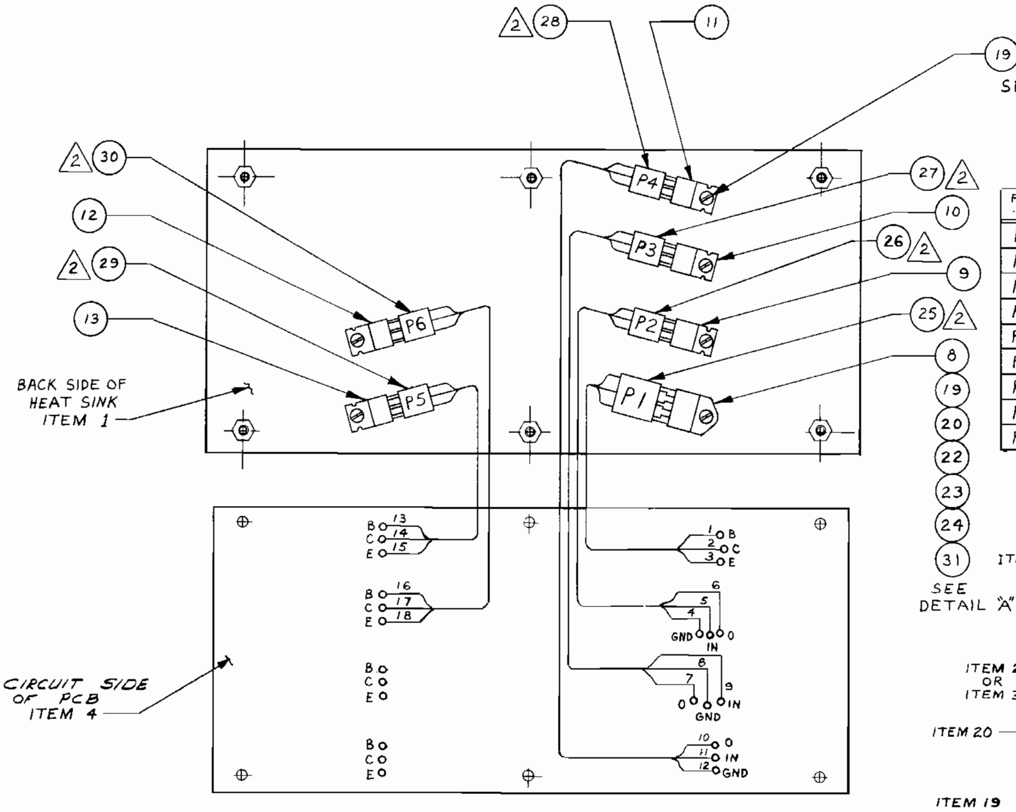


G-80 POWER SUPPLY CHASSIS ASSEMBLY DRAWING NUMBER 800-0191-01

ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
1	530-0016	1	Heat Sink G-80 Power Supply	
2	250-0460	1	Chassis Support G-80 Power Supply	
3	250-0461	1	Cover G-80 Power Supply	
4				
5	253-0206	6	Support PCB Threaded	
6	281-0032	8	SCR PNH Phil Thrd Frmg 6-32 x .375 lg.	
7	800-0170	1	PCB, Assy G-80 Power Supply	
8	482-0104	1	Power Transistor Tip 141	
9				
10	313-0014	1	Pos 12 Volt Regulator 340T12	
11				
12				
13				
14				
15				
16	420-0557	1	Decal, Fuse	
17				
18	420-0575	1	Decal Power Supply B	
19	281-0001	2	SCR, PNH Phil #4-40 X .500 Lg	
20	280-0341	2	Washer Shoulder #4	
21	310-0006	1	Insl XSTR to-220	
22	284-0001	2	Washer Flat # 4	
23	284-0031	2	Washer Lock Split #4	

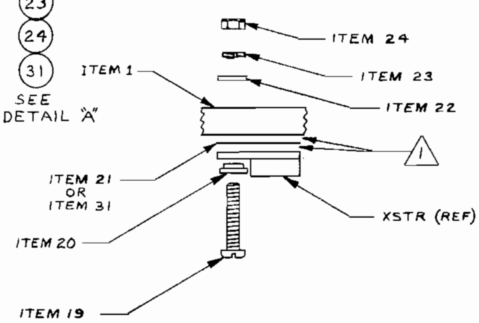
G-80 POWER SUPPLY CHASSIS ASSEMBLY DRAWING NUMBER 800-0191-01

ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
24	283-0021	2	Nut Hex Mach #4-40	
25	800-0243	1	Assy Harn XSTR G-80 P1	
26				
27	800-0245	1	Assy. Harn XSTR G-80 P3	
28				
29				
30				
31	310-0007	1	Insl XSTR "H" (To-218)	

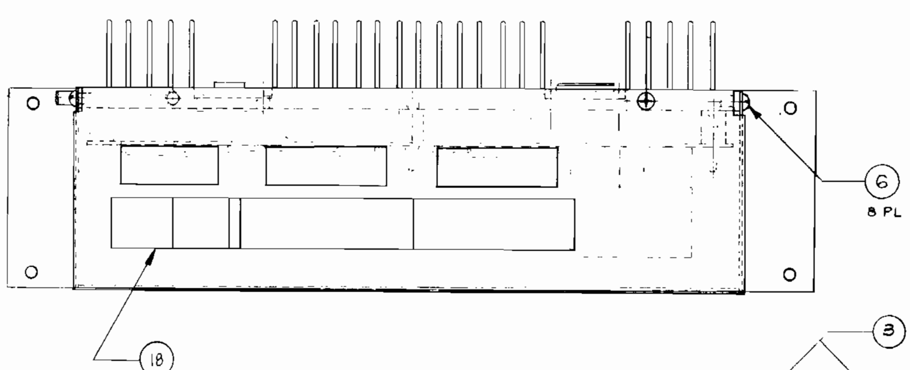


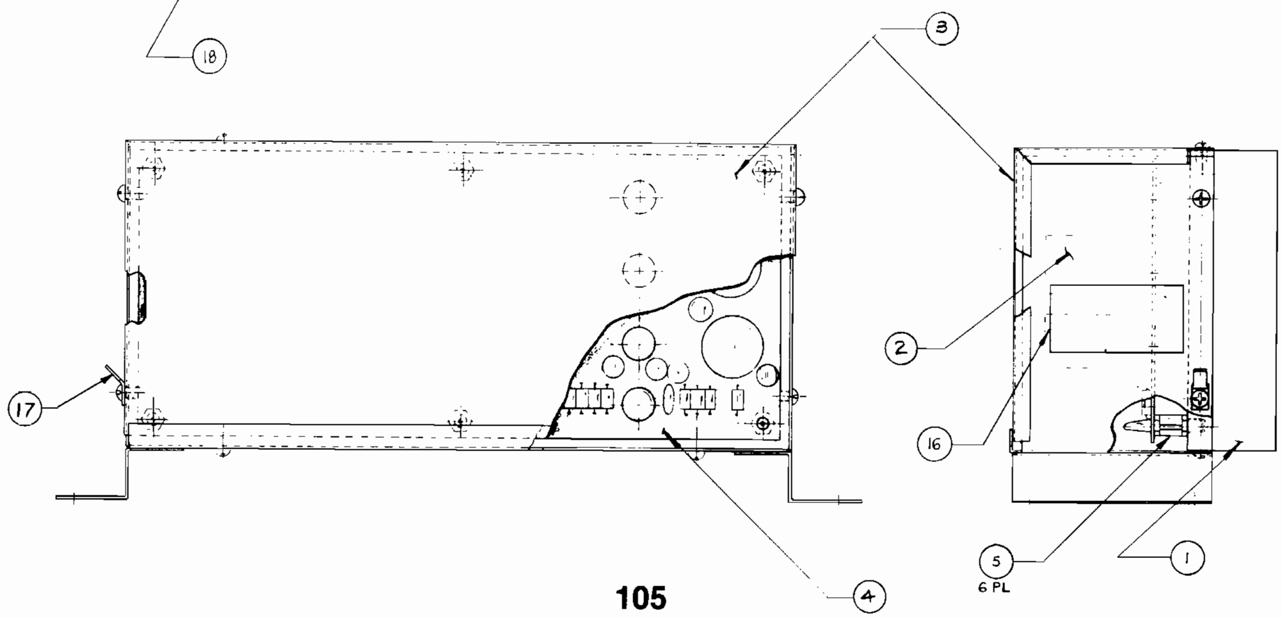
HARN INSTALLATION

PLUG NO.	WIRE NO.	WIRE COLOR	PLUG NO.	WIRE NO.	WIRE COLOR
P1	1	WHT	P4	10	WHT/RED
P1	2	RED	P4	11	WHT/GRN
P1	3	GRN	P4	12	BLK
P2	4	BLK	P5	13	GRN
P2	5	BLU	P5	14	RED
P2	6	BRN	P5	15	WHT
P3	7	ORN	P6	16	BRN
P3	8	BLK	P6	17	BLU
P3	9	VIO	P6	18	YEL



VIEW "A" TYP.





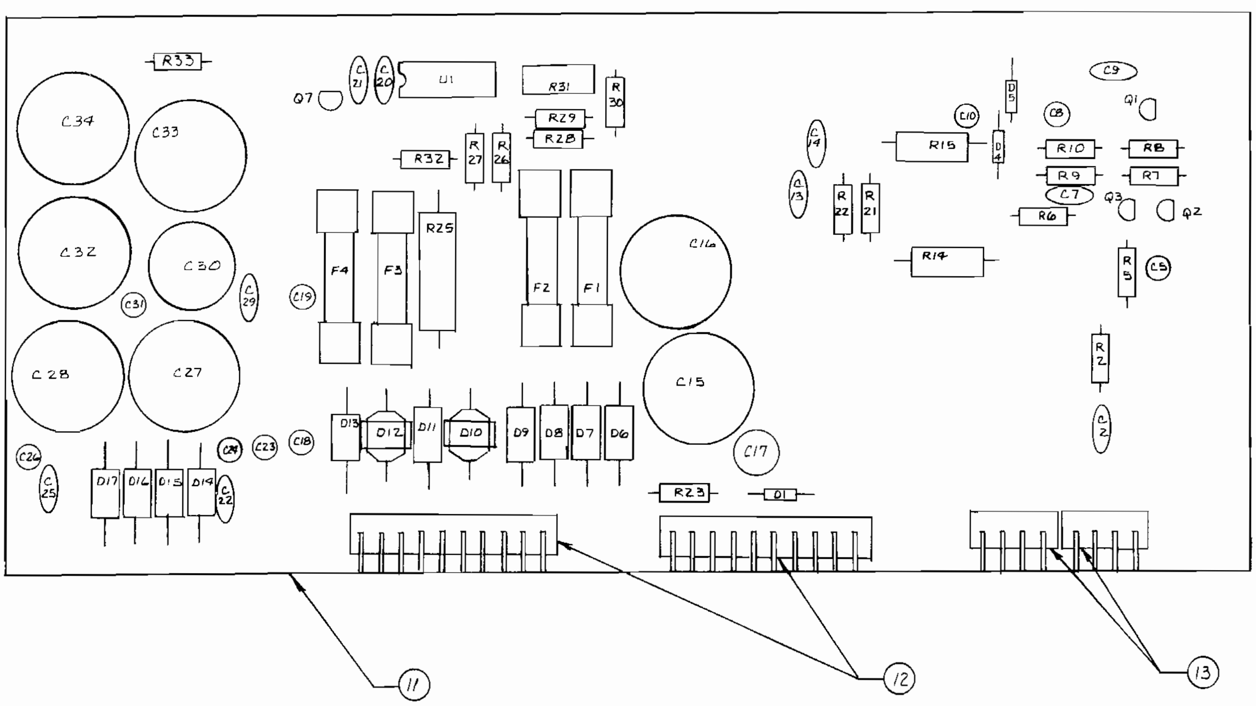
ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
1	150-0088	9	CAP E 10uf 25V	C5, C8, C10, C18, C19, C23, C24, C26, C31
2	150-0092	1	CAP E 100uf 25V	C17
3	150-0095	1	CAP E 3300uf 25V	C30
4	150-0096	3	CAP E 6800uf 16V	C32-C34
5	150-0097	4	CAP E 4700 uf 25V	C15, C16, C27, C28
6	151-0002	1	CAP Cer 100pf 50V	C9
7	151-0007	1	CAP Cer .005uf 100V	C20
8	151-0011	4	CAP Cer .01uf 50V	C21, C22, C25, C29,
9	151-0012	3	CAP Cer .1uf 50V	C2, C13, C14
10	151-0021	1	CAP Cer 20pf 50V	C7
11	170-0222	1	P.C. Board	
12	212-0020	2	Conn M 10 Pin RTA	
13	212-0081	2	Conn M 4 Pin RTA	
14	313-0001	1	IC LM 723 DIP	U1
15	471-0011	1	Res 10 oHm 1/2W 5%	R2
16	471-0101	1	Res 100 oHm 1/2W 5%	R32
17	471-0102	3	Res 1K oHm 1/2W 5%	R10, R27, R29
18	471-0103	2	Res 10K oHm 1/2W 5%	R6, R30
19	471-0104	1	Res 100K oHm 1/2W 5%	R23
20	471-0222	2	Res 2.2K oHm 1/2W 5%	R21, R22
21	471-0223	2	Res 22K oHm 1/2W 5%	R5, R9
22	471-0332	1	Res 3.3K oHm 1/2W 5%	R28
23	471-0182	1	Res 1.8K oHm 1/2W 5%	R26
24	471-0681	1	Res 680 oHm 1/2W 5%	R7
25	473-05R0	1	Res .05 oHm 5W 3%	R25

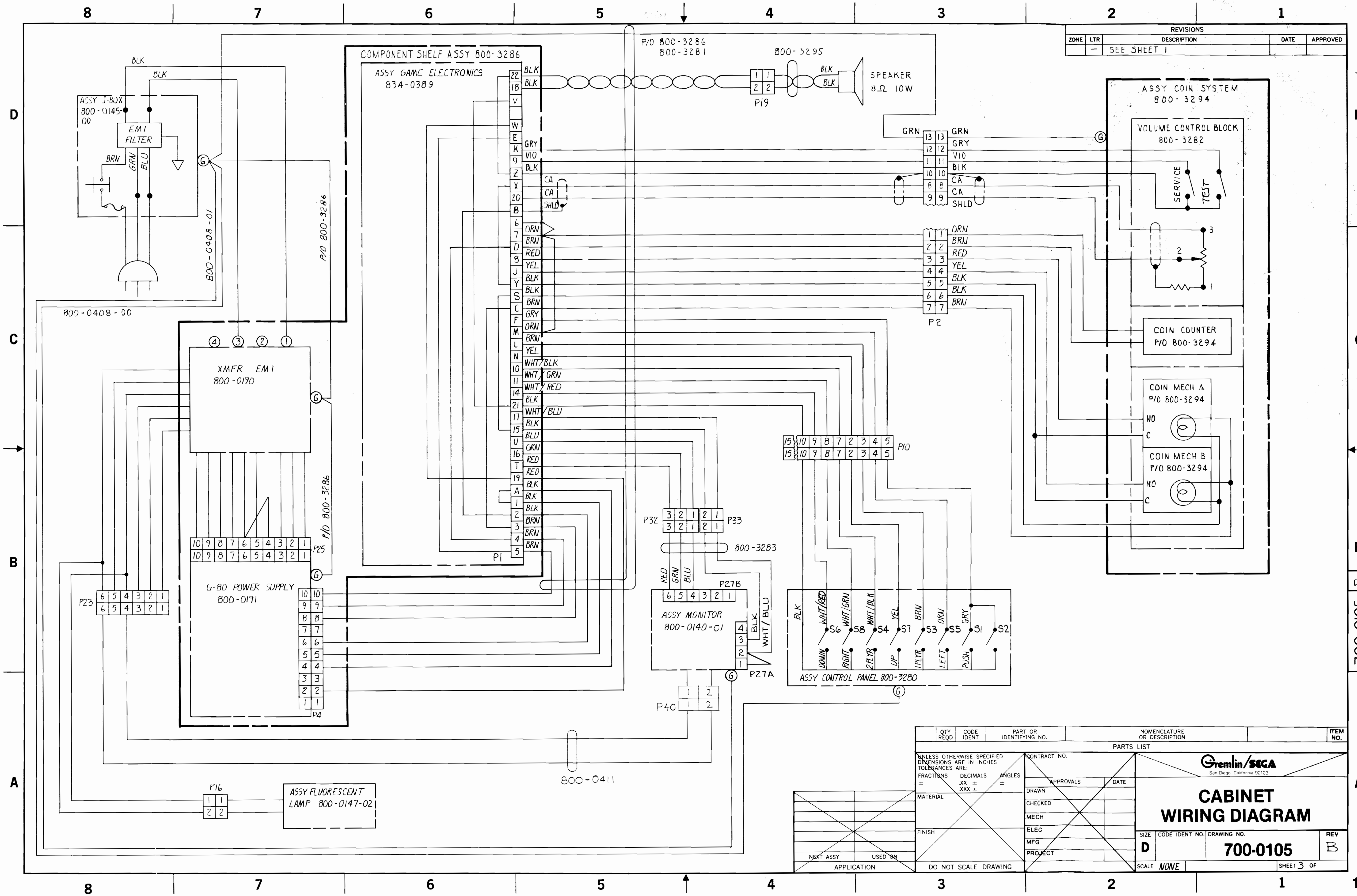
P.C. G-80 POWER SUPPLY ASSEMBLY DRAWING NUMBER 800-0170-01

ITEM NO.	PART NO.	QTY. REQ'D	DESCRIPTION	REF. DESG.
26	473-00R2	2	Res .2 oHm 3W 5%	R14, R15
27	475-0004	1	Pot 1K Car PCMTV	R31
28	481-0002	2	Diode MR751	D10, D12
29	481-0004	10	Diode MR501	D6-D9, D11, D13-D17
30	481-0006	3	Diode IN914/IN4148	D1, D4, D5
31	482-0006	2	XSTR 2N4403	Q1, Q7
32	482-0014	2	XSTR 2N4401	Q2, Q3
33				
34	514-0003	8	Clip Fuse MTG	
35				
36	514-0008	1	Fuse 10A SLO	F3
37				
38	471-0220	1	Res 22 oHm 1/2W 5%	R8
39	471-0221	1	Res 220 oHm 1/2W 5%	R33

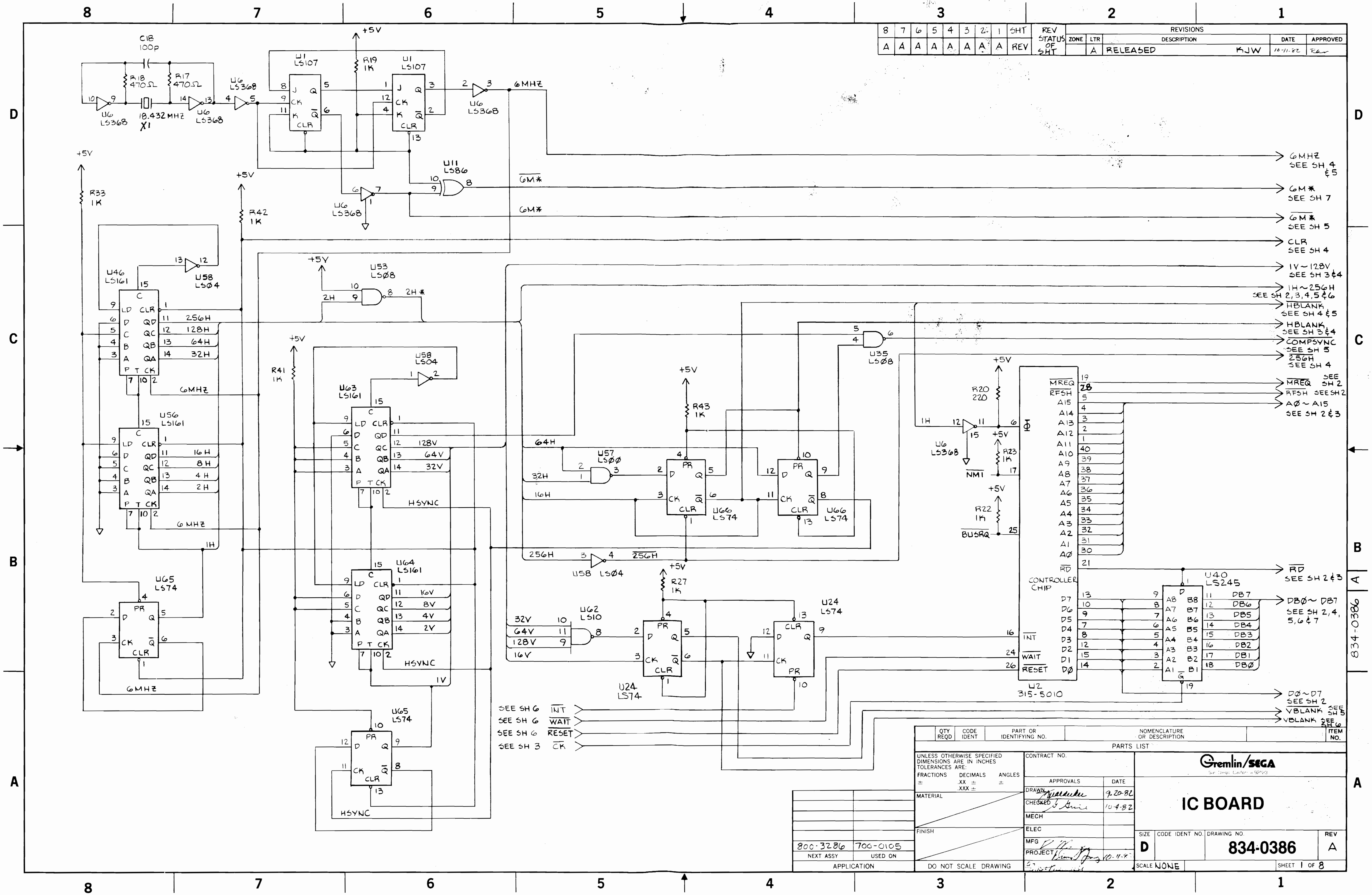
ASSY PC G-80 POWER SUPPLY

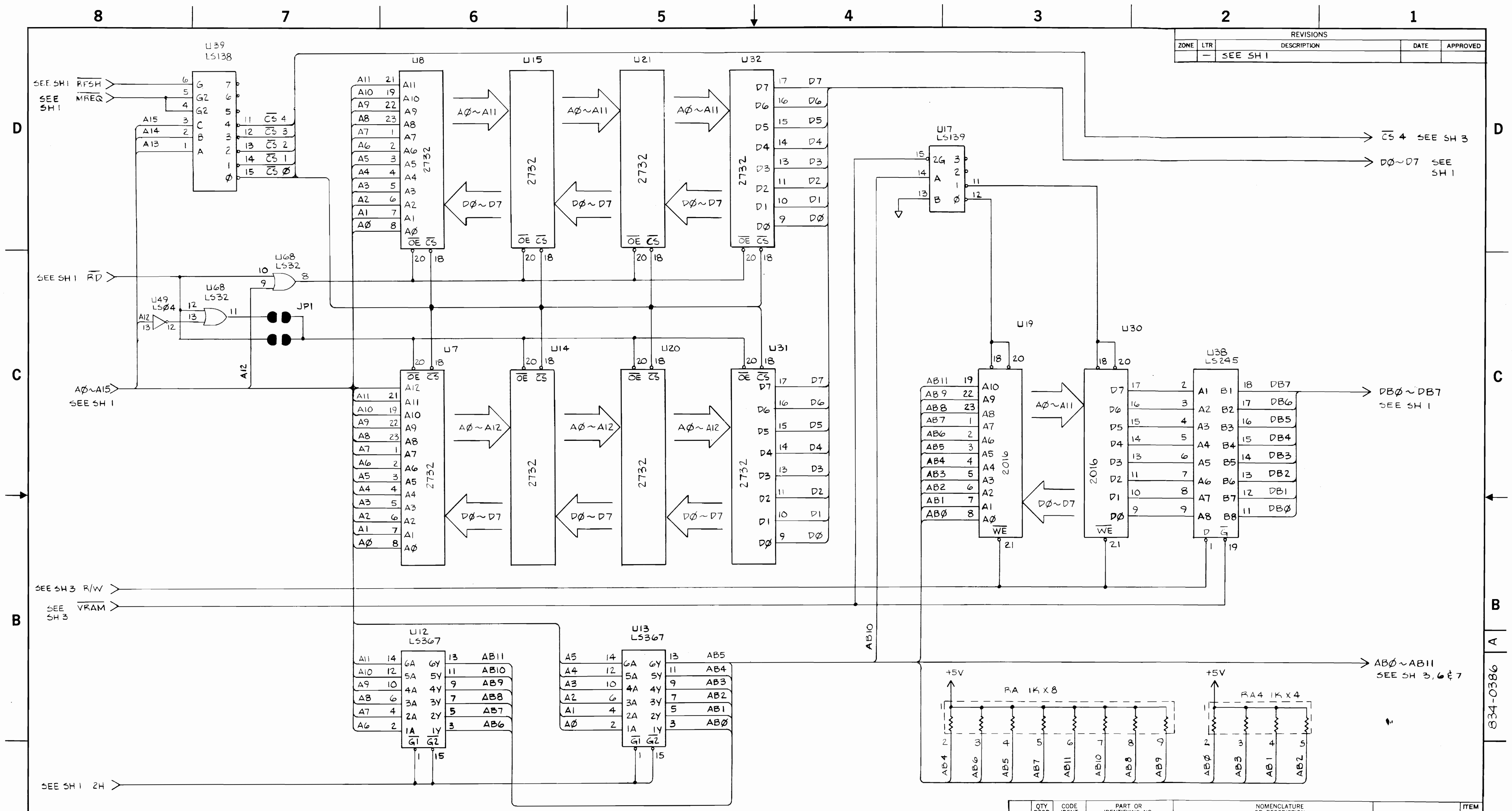
800-0170





REVISIONS
ZONE | LTR | DESCRIPTION | DATE | APPROVED
— SEE SHEET 1
ASSY J-BOX 800-0145-00
EMI FILTER
BLK
BRN GRN BLU
800-0408-01
800-0408-00
P/O 800-3286
COMPONENT SHELF ASSY 800-3286
ASSY GAME ELECTRONICS 834-0389
P1
P/O 800-3286 800-3281
800-3295
P19
SPEAKER 8Ω 10W
XMFR EMI 800-0190
G-80 POWER SUPPLY 800-0191
P25
P23
P4
P/O 800-3286
ASSY COIN SYSTEM 800-3294
VOLUME CONTROL BLOCK 800-3282
SERVICE
TEST
COIN COUNTER P/O 800-3294
COIN MECH A P/O 800-3294
COIN MECH B P/O 800-3294
NO
C
P2
P10
P32
P33
800-3283
P27B
P27A
ASSY MONITOR 800-0140-01
P40
800-0411
ASSY CONTROL PANEL 800-3280
DOWN RIGHT 2PLYR UP 1PLYR LEFT PUSH
S6 S8 S4 S7 S3 S5 S1 S2
P16
ASSY FLUORESCENT LAMP 800-0147-02
GRY VIO BLK CA SHLD ORN BRN RED YEL GRN WHT/BLK WHT/GRN WHT/RED WHT/BLU BLU
QTY REQD | CODE IDENT | PART OR IDENTIFYING NO. | NOMENCLATURE OR DESCRIPTION | ITEM NO.
PARTS LIST
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±
MATERIAL
FINISH
CONTRACT NO.
APPROVALS DATE
DRAWN
CHECKED
MECH
ELEC
MFG
PROJECT
NEXT ASSY USED ON
APPLICATION
DO NOT SCALE DRAWING
Gremlin/SEGA
San Diego California 92123
CABINET WIRING DIAGRAM
SIZE D
CODE IDENT NO.
DRAWING NO. 700-0105
REV B
SCALE NONE
SHEET 3 OF
700 0105 B


Gremlin/SEGA
IC BOARD
834-0386
SIZE D
REV A
SCALE NONE
SHEET 1 OF 8
REVISIONS
A RELEASED KJW 10-11-82
800-3286
700-0105
NEXT ASSY
USED ON
APPLICATION
DO NOT SCALE DRAWING
PARTS LIST
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS
DECIMALS
ANGLES
MATERIAL
FINISH
CONTRACT NO.
APPROVALS
DATE
DRAWN 9-20-82
CHECKED 10-4-82
MECH
ELEC
MFG
PROJECT 10-11-82
18.432 MHZ
X1
6MHZ SEE SH 4 & 5
6M* SEE SH 7
6M* SEE SH 5
CLR SEE SH 4
1V~128V SEE SH 3 & 4
1H~256H SEE SH 2,3,4,5 & 6
HBLANK SEE SH 4 & 5
HBLANK SEE SH 3 & 4
COMPSYNC SEE SH 5
256H SEE SH 4
MREQ SEE SH 2
RFSH SEE SH 2
A0~A15 SEE SH 2 & 3
RD SEE SH 2 & 3
DB0~DB7 SEE SH 2,4,5,6 & 7
D0~D7 SEE SH 2
VBLANK SEE SH 5
VBLANK SEE SH 6
SEE SH 6 INT
SEE SH 6 WAIT
SEE SH 6 RESET
SEE SH 3 CK
CONTROLLER CHIP
U2 315-5010
U40 LS245
HSYNC



ZONE	LTR	REVISIONS DESCRIPTION	DATE	APPROVED
	—	SEE SH 1		

QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	ITEM NO.

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±

MATERIAL

FINISH

NEXT ASSY | USED ON
APPLICATION

DO NOT SCALE DRAWING

CONTRACT NO.
APPROVALS | DATE
DRAWN
CHECKED
MECH
ELEC
MFG
PROJECT

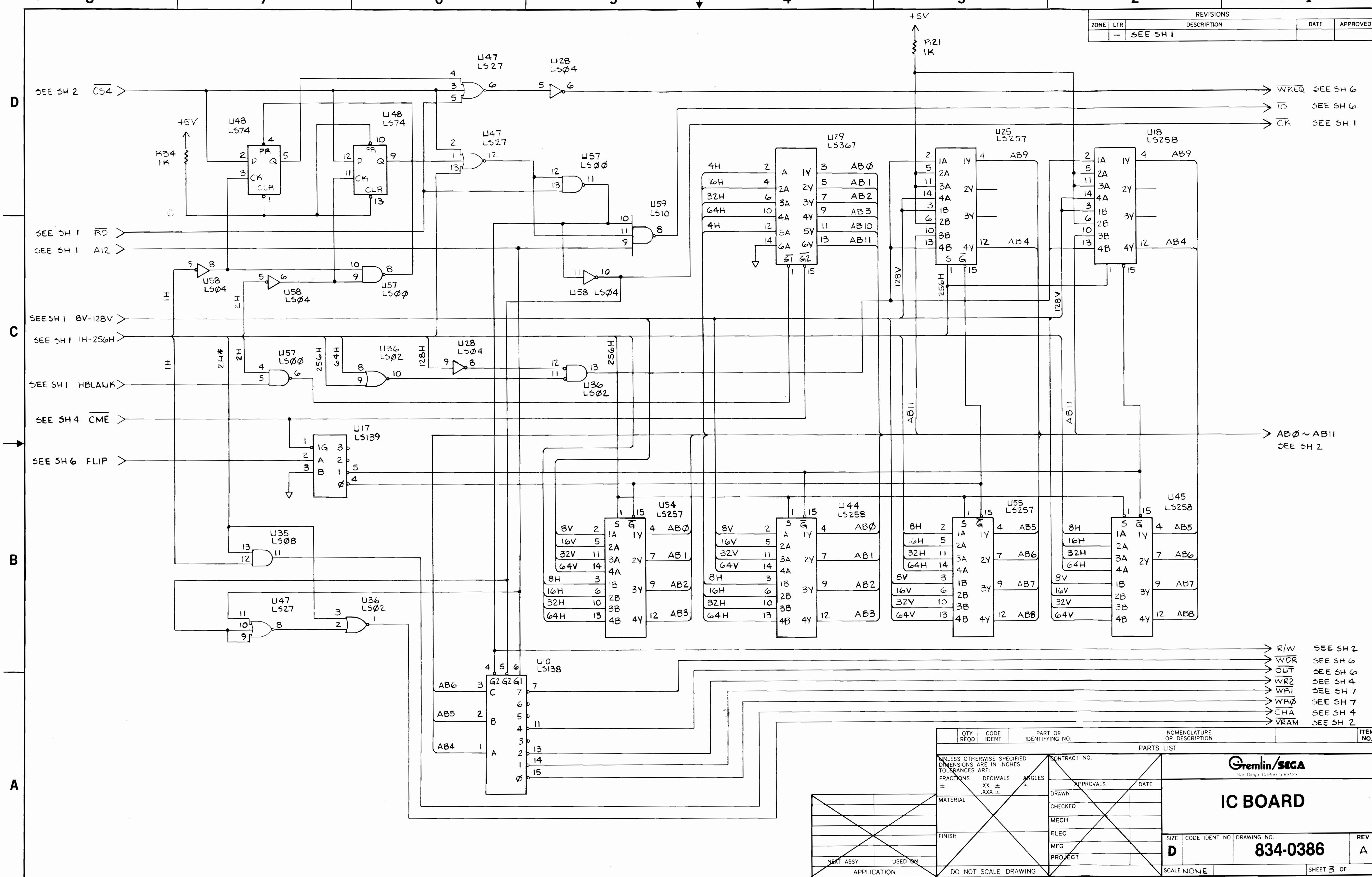
Gremlin/SEGA
San Diego, California 92123

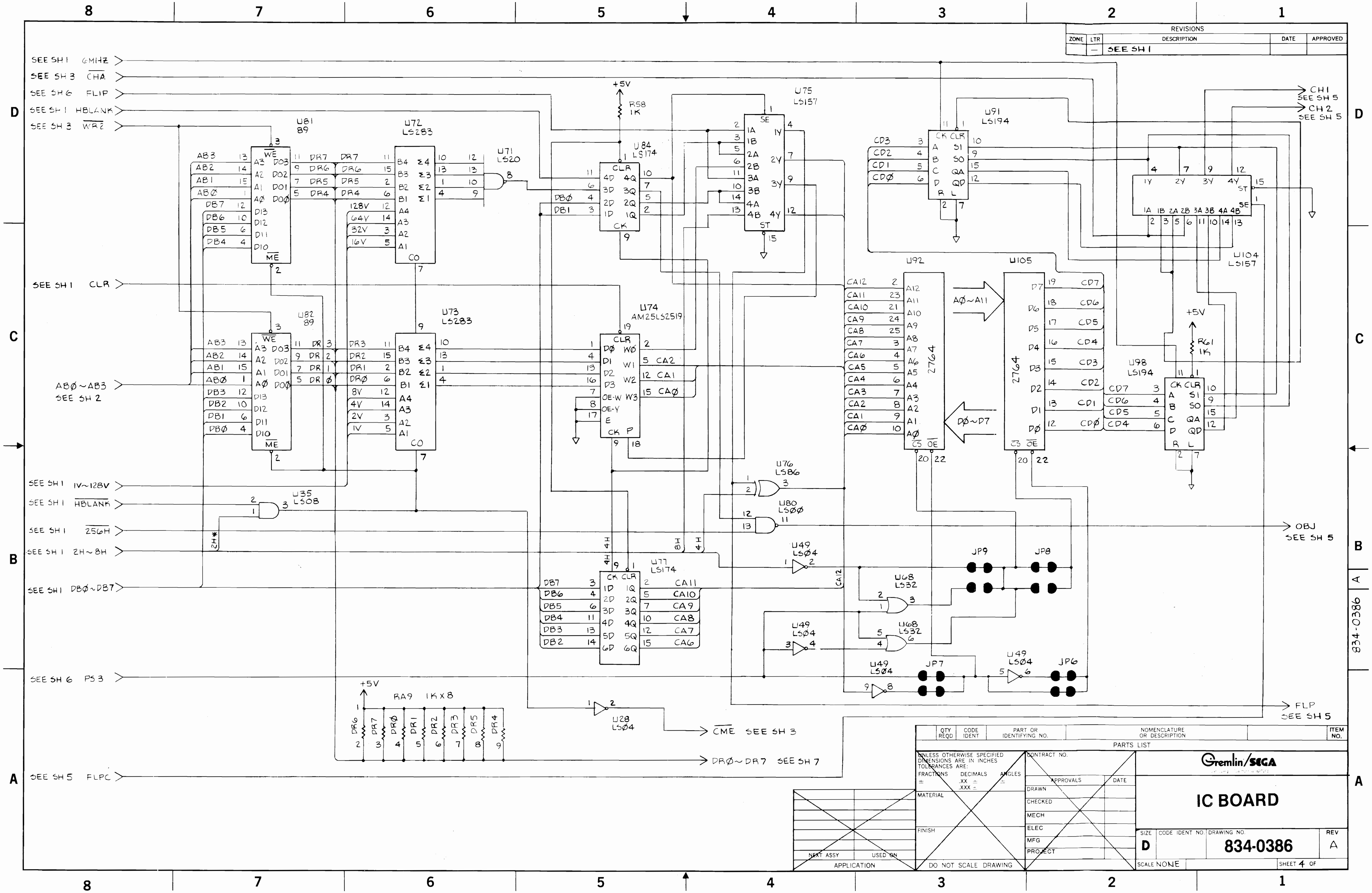
IC BOARD

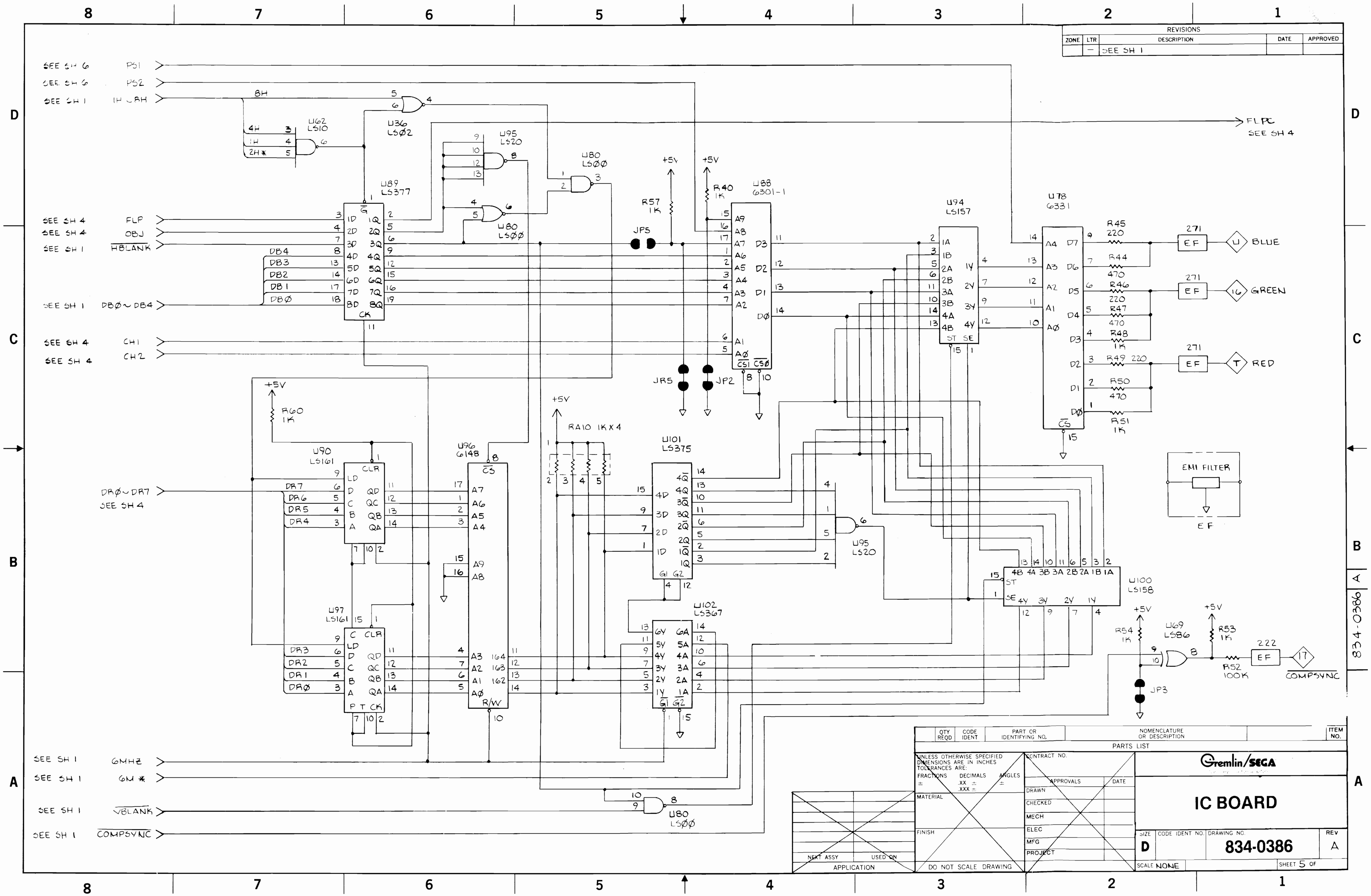
SIZE D | CODE IDENT NO. | DRAWING NO. 834-0386 | REV A

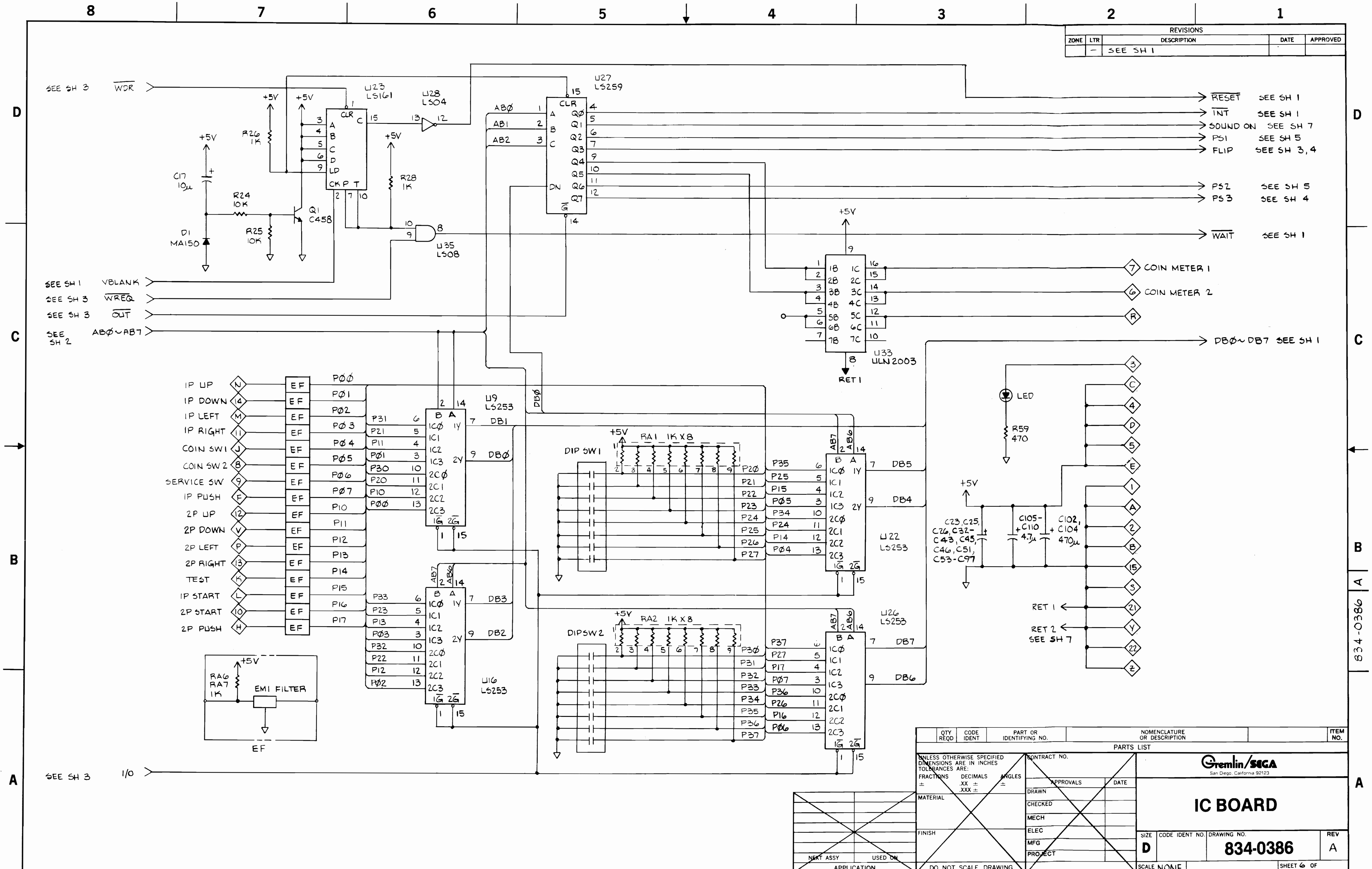
SCALE NONE | SHEET 2 OF

834-0386 A


REVISIONS
ZONE LTR DESCRIPTION DATE APPROVED
— SEE SH 1
SEE SH 2 CS4
SEE SH 1 RD
SEE SH 1 A12
SEE SH 1 8V-128V
SEE SH 1 1H-256H
SEE SH 1 HBLANK
SEE SH 4 CME
SEE SH 6 FLIP
U47 LS27
U28 LS04
U48 LS74
U47 LS27
U57 LS00
U59 LS10
U58 LS04
U57 LS00
U58 LS04
U29 LS367
U25 LS257
U18 LS258
U57 LS00
U36 LS02
U28 LS04
U36 LS02
U17 LS139
U35 LS08
U47 LS27
U36 LS02
U10 LS138
U54 LS257
U44 LS258
U55 LS257
U45 LS258
+5V
R34 1K
R21 1K
WREQ SEE SH 6
IO SEE SH 6
CK SEE SH 1
AB0~AB11 SEE SH 2
R/W SEE SH 2
WDR SEE SH 6
OUT SEE SH 6
WR2 SEE SH 4
WR1 SEE SH 7
WR0 SEE SH 7
CHA SEE SH 4
VRAM SEE SH 2
QTY REQD CODE IDENT PART OR IDENTIFYING NO. NOMENCLATURE OR DESCRIPTION ITEM NO.
PARTS LIST
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS DECIMALS ANGLES
MATERIAL
FINISH
NEXT ASSY USED ON
APPLICATION
DO NOT SCALE DRAWING
CONTRACT NO.
APPROVALS DATE
DRAWN
CHECKED
MECH
ELEC
MFG
PROJECT
Gremlin/SEGA
IC BOARD
SIZE D
CODE IDENT NO.
DRAWING NO. 834-0386
REV A
SCALE NONE
SHEET 3 OF
834-0386 A


REVISIONS
ZONE | LTR | DESCRIPTION | DATE | APPROVED
— SEE SH 1
SEE SH 1 6MHZ
SEE SH 3 CHA
SEE SH 6 FLIP
SEE SH 1 HBLANK
SEE SH 3 WRZ
SEE SH 1 CLR
AB0~AB3 SEE SH 2
SEE SH 1 1V~128V
SEE SH 1 HBLANK
SEE SH 1 256H
SEE SH 1 2H~8H
SEE SH 1 DB0~DB7
SEE SH 6 PS3
SEE SH 5 FLPC
U81 89
U82 89
U72 LS283
U73 LS283
U71 LS20
U84 LS174
U74 AM25LS2519
U75 LS157
U91 LS194
U92 2764
U105 2764
U98 LS194
U104 LS157
U76 LS86
U80 LS00
U35 LS08
U77 LS174
U49 LS04
U68 LS32
U28 LS04
R58 1K
R61 1K
RA9 1K X 8
+5V
JP6
JP7
JP8
JP9
A0~A11
D0~D7
CH1 SEE SH 5
CH2 SEE SH 5
OBJ SEE SH 5
FLP SEE SH 5
CME SEE SH 3
DR0~DR7 SEE SH 7
834-0386 A
QTY REQD | CODE IDENT | PART OR IDENTIFYING NO. | NOMENCLATURE OR DESCRIPTION | ITEM NO.
PARTS LIST
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS DECIMALS ANGLES
MATERIAL
FINISH
NEXT ASSY USED ON
APPLICATION
DO NOT SCALE DRAWING
CONTRACT NO.
APPROVALS DATE
DRAWN
CHECKED
MECH
ELEC
MFG
PROJECT
Gremlin/SEGA
IC BOARD
SIZE D CODE IDENT NO. DRAWING NO. 834-0386 REV A
SCALE NONE SHEET 4 OF


REVISIONS
ZONE LTR DESCRIPTION DATE APPROVED
— SEE SH 1
SEE SH 6 PS1
SEE SH 6 PS2
SEE SH 1 1H LAH
SEE SH 4 FLP
SEE SH 4 OBJ
SEE SH 1 HBLANK
SEE SH 1 DBØ~DB4
SEE SH 4 CH1
SEE SH 4 CH2
DRØ~DR7 SEE SH 4
SEE SH 1 6MHZ
SEE SH 1 6M *
SEE SH 1 VBLANK
SEE SH 1 COMPSYNC
FLPC SEE SH 4
U62 LS10
U36 LS02
U95 LS20
U80 LS00
U89 LS377
U88 6301-1
U94 LS157
U78 6331
U90 LS161
U96 6148
U101 LS375
U97 LS161
U102 LS367
U100 LS158
U69 LS86
RA10 1K X 4
R57 1K
R40 1K
R60 1K
JP5
JR5
JP2
JP3
R45 220
R44 470
R46 220
R47 470
R48 1K
R49 220
R50 470
R51 1K
R54 1K
R53 1K
R52 100K
BLUE
GREEN
RED
COMPSYNC
EMI FILTER
EF
PARTS LIST
QTY REQD
CODE IDENT
PART OR IDENTIFYING NO.
NOMENCLATURE OR DESCRIPTION
ITEM NO.
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS DECIMALS ANGLES
MATERIAL
FINISH
NEXT ASSY USED ON
APPLICATION
DO NOT SCALE DRAWING
CONTRACT NO.
APPROVALS DATE
DRAWN
CHECKED
MECH
ELEC
MFG
PROJECT
Gremlin/SEGA
IC BOARD
SIZE D
CODE IDENT NO.
DRAWING NO. 834-0386
REV A
SCALE NONE
SHEET 5 OF
834-0386 A



QTY REQD	CODE IDENT	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	ITEM NO.

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±

MATERIAL

FINISH

DO NOT SCALE DRAWING

NEXT ASSY | USED ON

APPLICATION

CONTRACT NO.

APPROVALS | DATE

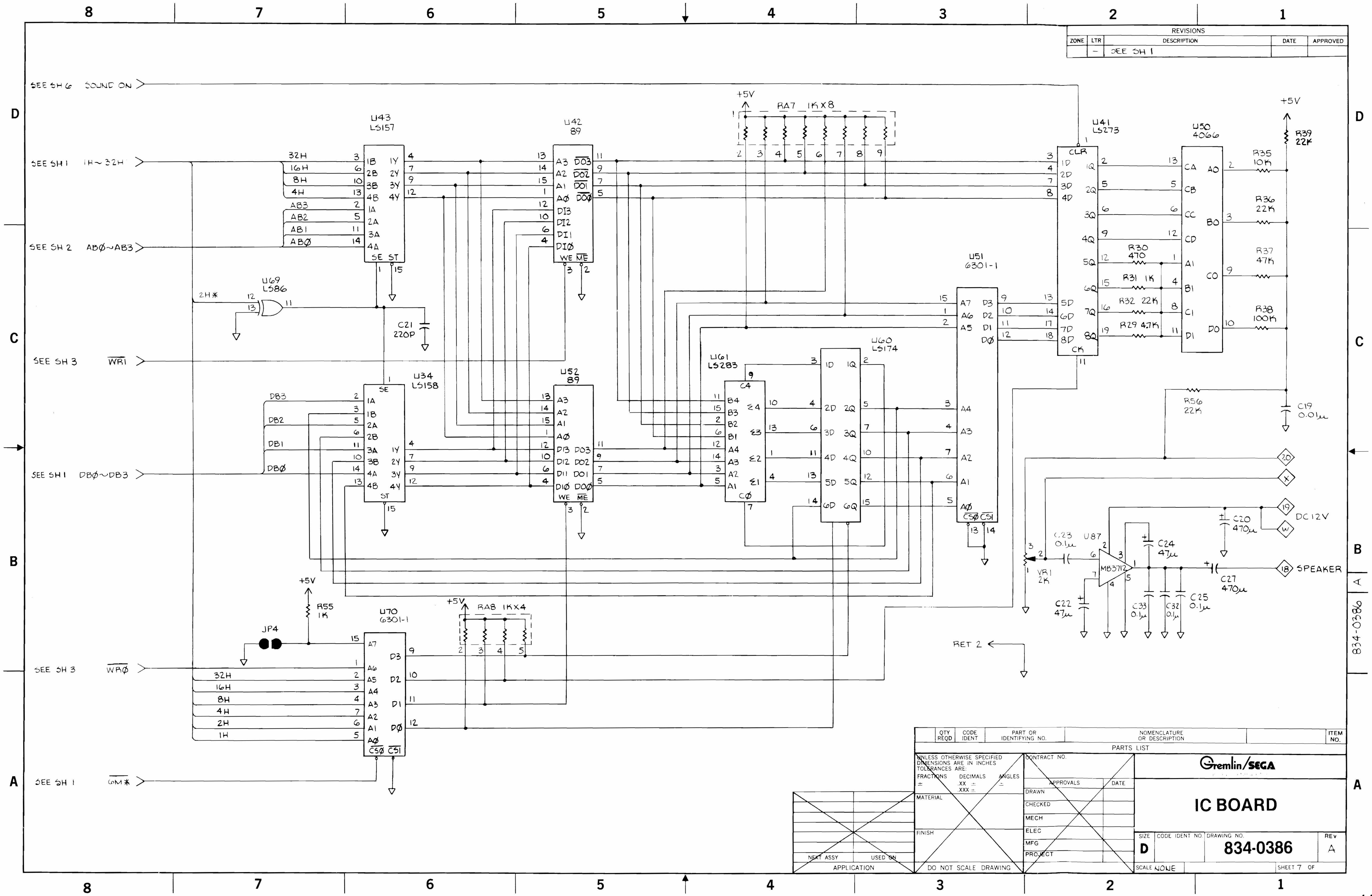
DRAWN
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MFG
PROJECT

Gremlin/SEGA
San Diego, California 92123

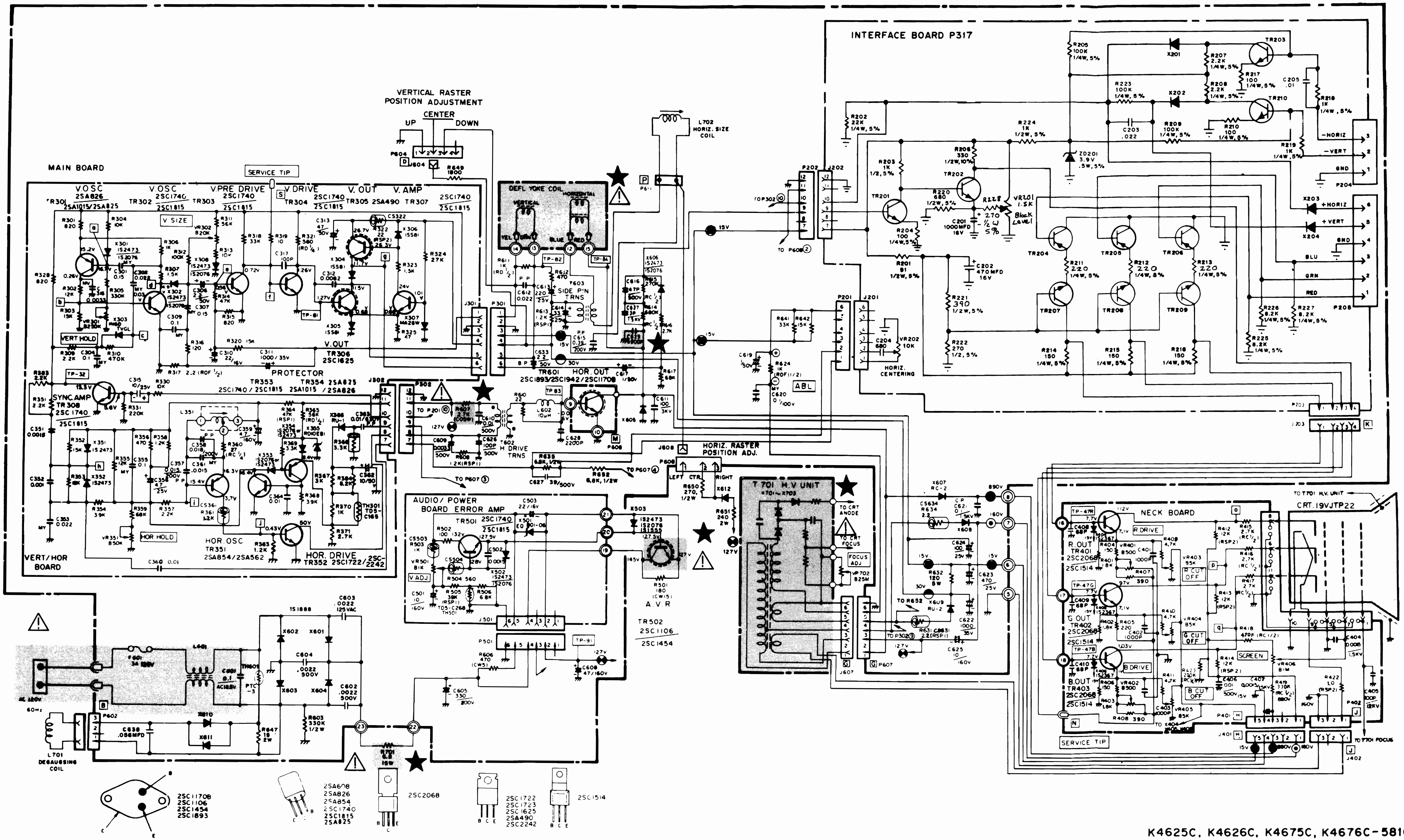
IC BOARD

SIZE D | CODE IDENT NO. | DRAWING NO. 834-0386 | REV A

SCALE NONE | SHEET 6 OF



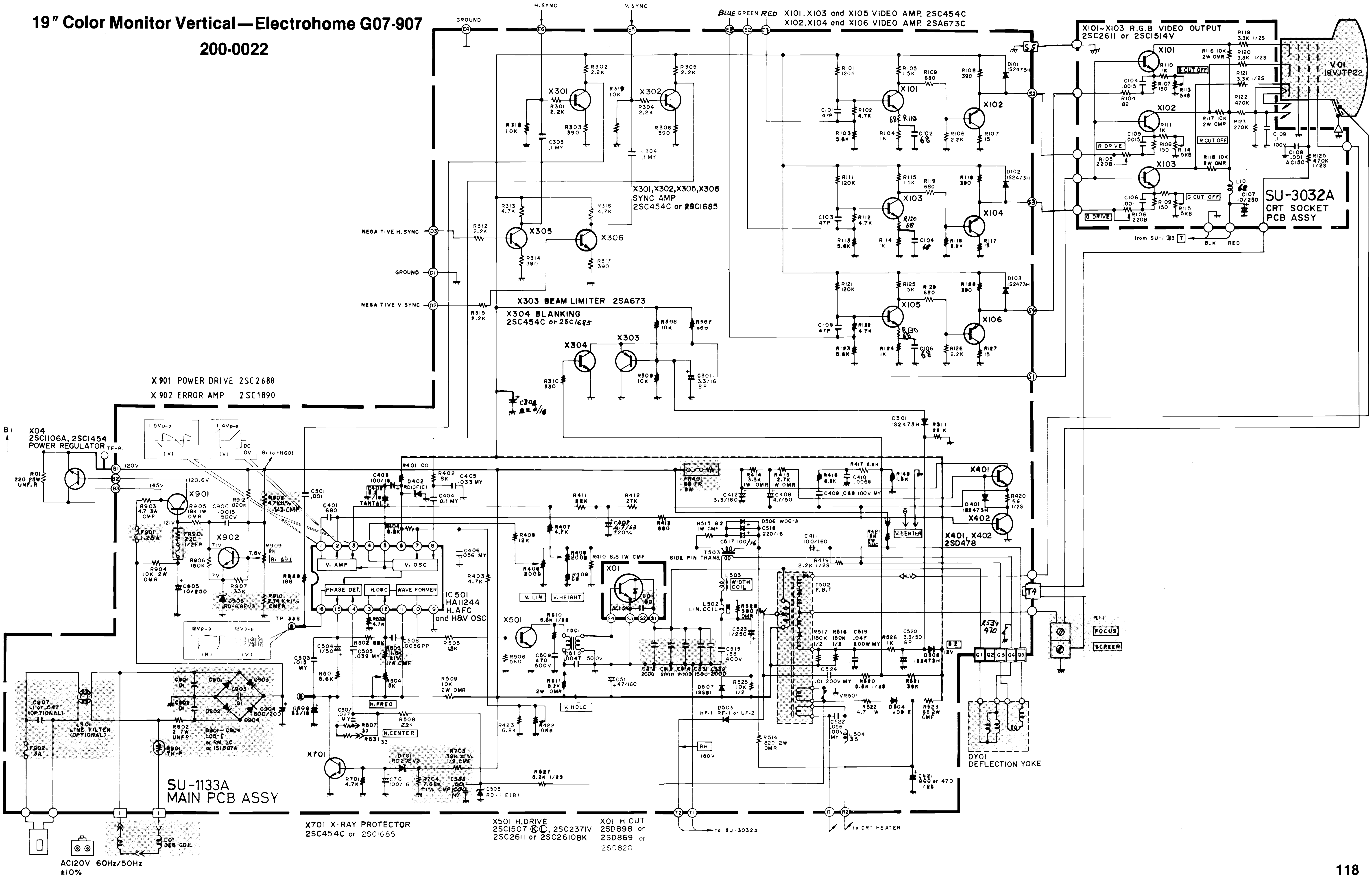
REVISIONS
ZONE LTR DESCRIPTION DATE APPROVED
— SEE SH 1
SEE SH 6 SOUND ON
SEE SH 1 1H~32H
SEE SH 2 ABØ~AB3
SEE SH 3 WR1
SEE SH 1 DBØ~DB3
SEE SH 3 WRØ
SEE SH 1 OM*
U43 LS157
U42 89
RA7 1Kx8
+5V
U41 LS273
U50 4066
R39 22K
R35 10K
R36 22K
R37 47K
R38 100K
R30 470
R31 1K
R32 22K
R29 4.7K
U51 6301-1
U69 LS86
2H*
C21 220P
U34 LS158
U52 89
U61 LS283
U60 LS174
R56 22K
C19 0.01μ
C23 0.1μ
U87 MB3712
VR1 2K
C24 47μ
C20 470μ
DC12V
C27 470μ
SPEAKER
C22 47μ
C33 0.1μ
C32 0.1μ
C25 0.1μ
RET 2
+5V
R55 1K
JP4
U70 6301-1
RA8 1Kx4
QTY REQD CODE IDENT PART OR IDENTIFYING NO. NOMENCLATURE OR DESCRIPTION ITEM NO.
PARTS LIST
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES
MATERIAL
FINISH
CONTRACT NO.
APPROVALS DATE
DRAWN
CHECKED
MECH
ELEC
MFG
PROJECT
NEXT ASSY USED ON
APPLICATION
DO NOT SCALE DRAWING
Gremlin/SEGA
IC BOARD
SIZE D CODE IDENT NO. DRAWING NO. 834-0386 REV A
SCALE NONE SHEET 7 OF
834-0386 A



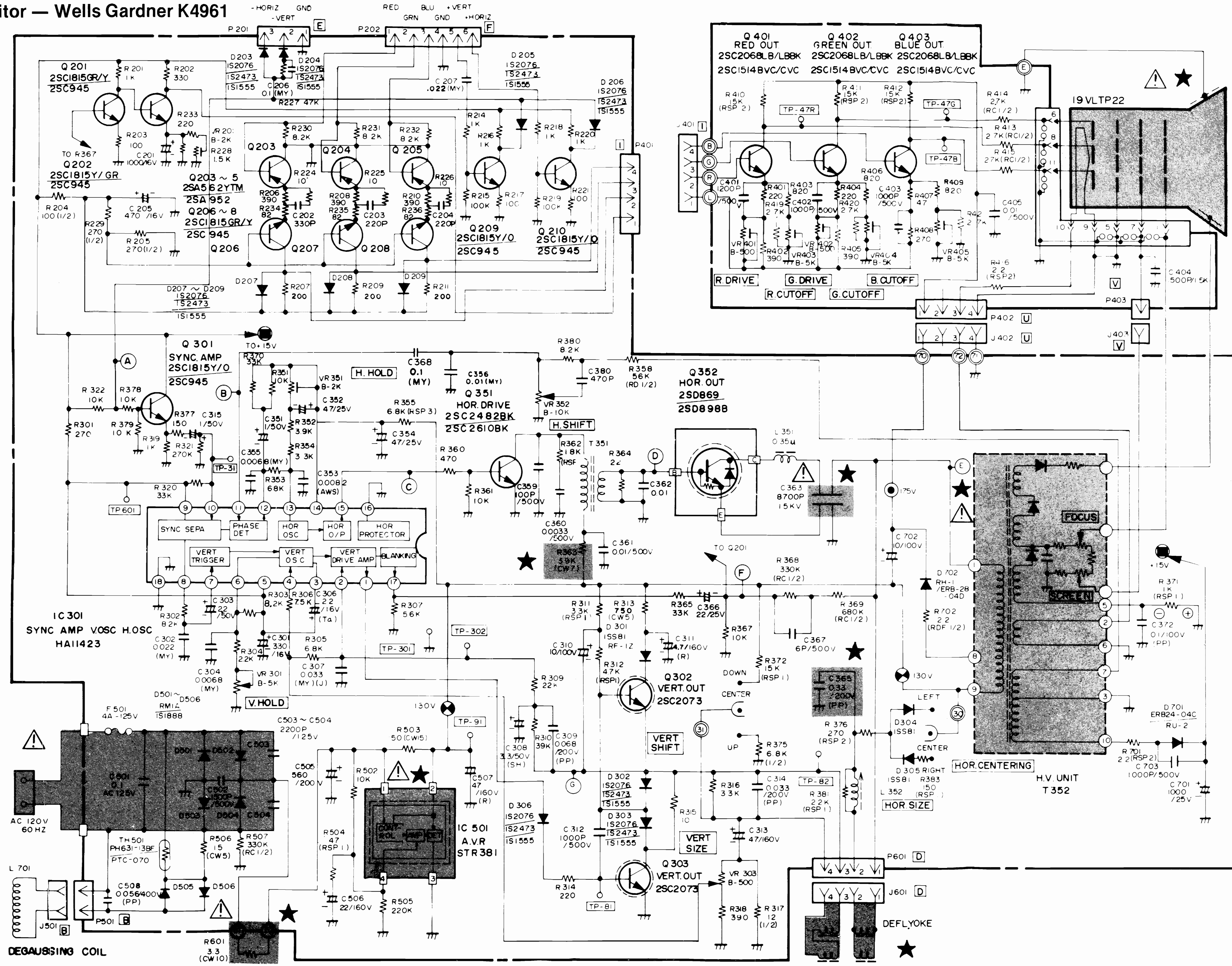
INTERFACE BOARD P317
MAIN BOARD
SERVICE TIP
VERTICAL RASTER POSITION ADJUSTMENT
CENTER
UP
DOWN
L702 HORIZ. SIZE COIL
DEFL YOKE COIL
V SIZE
VERT HOLD
V.OSC
V.PRE DRIVE
V.DRIVE
V.OUT
V.AMP
PROTECTOR
SYNC AMP
HOR. OSC
HOR. DRIVE
HOR HOLD
VERT/HOR BOARD
HOR. OUT
SIDE PIN TRNS
H DRIVE TRNS
HORIZ. RASTER POSITION ADJ.
LEFT
CTR
RIGHT
HORIZ. CENTERING
T 701 H.V UNIT
TO CRT ANODE
TO CRT FOCUS
FOCUS ADJ
AUDIO/POWER BOARD ERROR AMP
V ADJ
A.V.R
NECK BOARD
CRT. 19VJTP22
R.OUT
G.OUT
B.OUT
R DRIVE
B DRIVE
R CUT OFF
G CUT OFF
B CUT OFF
SCREEN
-HORIZ
-VERT
+HORIZ
+VERT
GND
BLU
GRN
RED
Black Level
L701 DEGAUSSING COIL
AC 120V 60Hz
2SC1170B
2SC1106
2SC1454
2SC1893
2SA608
2SA826
2SA854
2SC1740
2SC1815
2SA825
2SC2068
2SC1722
2SC1723
2SC1625
2SA490
2SC2242
2SC1514

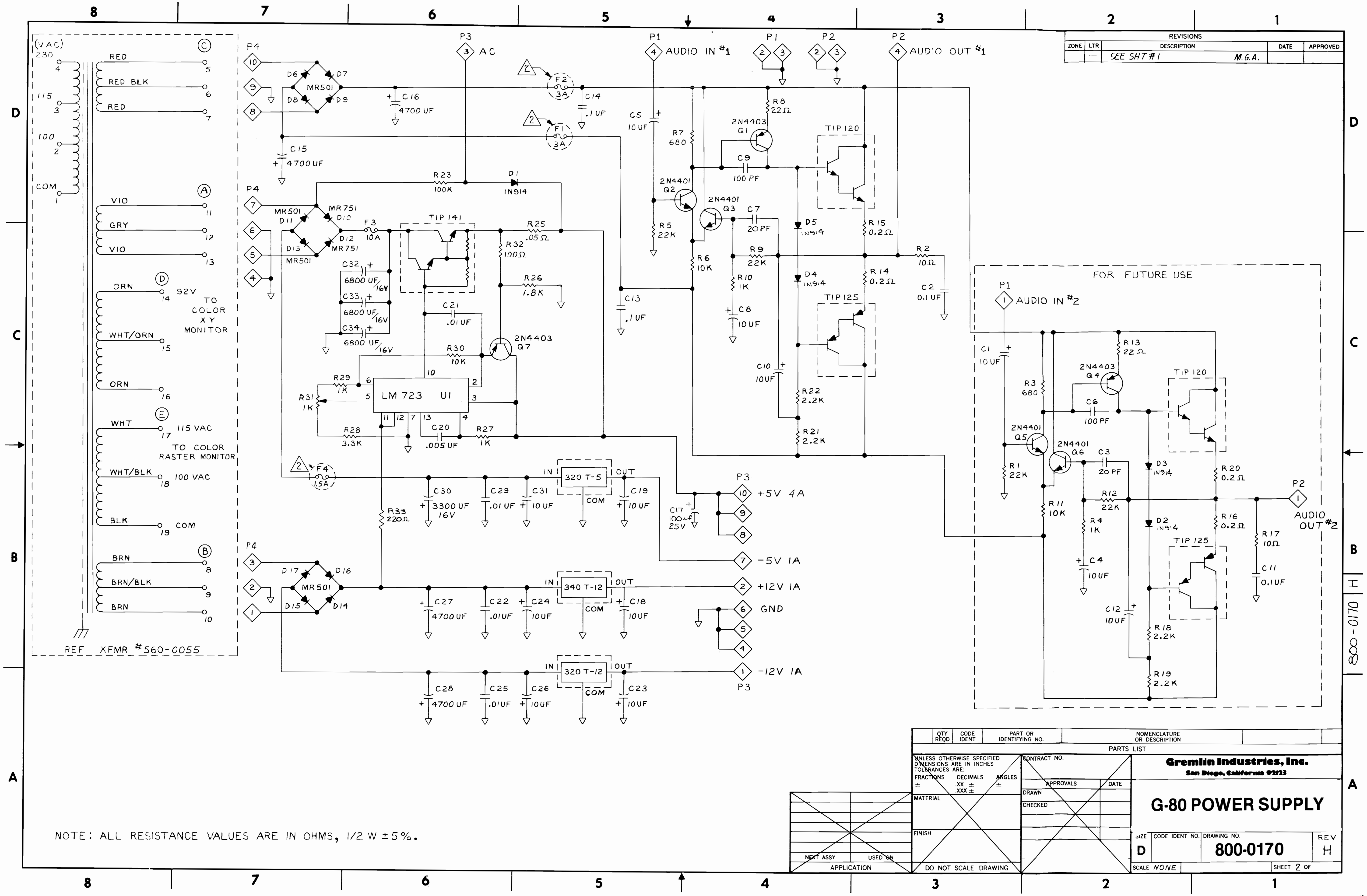
19″ Color Monitor Vertical—Electrohome G07-907

200-0022



19″ Color Monitor — Wells Gardner K4961




G-80 POWER SUPPLY
Gremlin Industries, Inc.
San Diego, California 92123
DRAWING NO. 800-0170
REV H
SIZE D
SCALE NONE
SHEET 2 OF
REVISIONS
SEE SHT #1
M.G.A.
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
DO NOT SCALE DRAWING
PARTS LIST
NEXT ASSY
USED ON
APPLICATION
NOTE: ALL RESISTANCE VALUES ARE IN OHMS, 1/2 W ±5%.
REF XFMR #560-0055
P4
P3 AC
P1 AUDIO IN #1
P2 AUDIO OUT #1
FOR FUTURE USE
P1 AUDIO IN #2
P2 AUDIO OUT #2
92V TO COLOR X Y MONITOR
115 VAC TO COLOR RASTER MONITOR
100 VAC
COM
LM 723 U1
320 T-5
340 T-12
320 T-12
+5V 4A
-5V 1A
+12V 1A
GND
-12V 1A
TIP 120
TIP 125
TIP 141
2N4403
2N4401
MR501
MR751
IN914
800-0170 H

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